

## INSIDE DOPE

by GEORGE F. TAUBENECK

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Freezer Dealer Is a  
World Champion (Curler)  
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Sports Brief

### Stories of the Week

Seeking a bit of solitude after a heavily important REMA committee meeting, a man who shall remain incognito engaged a Homestead survey for a leisurely drive through the mountain scenery which embellishes this Hot Springs resort.

All went well for 10 minutes. Our friend was relaxing serenely. Suddenly he suffered an attack of cramps in his neck-and-back muscles.

"I say, driver," he called out, "is there a good osteopath in Hot Springs?"

"Not that I know of, suh," replied the hackie. "Theah's some fine bridle paths, though."

Midst the hurly-burly of the week following March 15, a mousey little fellow found his way into an office of the Collector of Internal Revenue. Fascinatedly he sat there until a clerk happened to look up and see him.

"Anything we can do for you?" suspiciously the clerk.

"Not a thing, I came here a-purpose to see the people I work for."

### Gags of the Week

There's an advertising agency in New York which prides itself on a lower-case letterhead which reads like this—

"rothschild, inc."

The partners explain that they are remotely related to the Rothschild family, but don't have capital.

"In America there are two classes of travel—first class, and with children. Travelling with children corresponds roughly to travelling third class in Bulgaria."—ROBERT BENCHLEY.

### How Producers Can Hedge Bets

Beardsley Ruml, noted economist and former chairman of the Federal Reserve Bank of New York, declares that payment of an excess profits tax will be "a presumption of managerial inadequacy." He predicts that American businessmen will use tax-created "cheap dollars" for self-development and protection of consumers, employees, and stockholders.

Ruml observes that President Truman created "two kinds of money"—cheap earned dollars and expensive earned dollars—and forced a profound change in the kind of business system we shall have in this country. "Cheap dollars are those which, if not spent, will be taxed at high marginal excess profits rates," he declares. "Expensive dollars are those which are taxed at ordinary rates."

Under the excess profits tax law, the marginal rate is 77%, giving the "cheap earned dollar" a value of only 23 cents. The ordinary rate is 47 cents; so the "expensive earned dollar" is worth 53 cents, more than twice as much as the cheap dollar. "If marginal rate is increased still further," he added, "the cheap dollar will become cheaper still."

Besides its inflationary consequences, the existence of cheap dollars "makes prudent many business activities that would not be prudent except for the fact that the dollars expended are cheap," Ruml adds.

"The excess profits tax is therefore not a burden, but a subsidy. It provides cheap dollars to the profitable and established company, dollars which can and must be used by a responsible management to safeguard and to extend the position of such a company against competition.

"If a company is not in excess profits, if it is weak in earnings, or young, or with inadequate capital—in other words, if it has only expensive dollars in its arsenal—it is at

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## How Industry Reacts to Gov't Controls on Mfrs. Prices OPS Adds New CPR 22 Ruling; Producers Seek Changes

### New Means of Figuring Ceilings Under CPR 22

WASHINGTON, D. C.—A fifth method of figuring manufacturers' ceiling prices, intended to aid multi-product companies whose materials costs have varied considerably since the outbreak of the Korean war, has been written into Ceiling Price Regulation 22, the Office of Price Stabilization announced recently.

This method is for manufacturers who find the original four methods too burdensome or for whom a uniform cost increase percentage for all products might cause an undesirable disturbance of existing price patterns, according to OPS.

Under this method, the manufacturer can adjust his ceilings under the General Ceiling Price Regulation rather than adding permissible labor and materials cost increase factors to his pre-Korean base price.

If this method proves unsatisfactory, OPS indicated, the manufacturer

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### Sales Gain 10% for NEMA in 1st 2 Mos.

NEW YORK CITY—Household refrigerator sales during the first two months of 1951 were about 10% ahead of the same months of 1950, reports by 16 firms reporting to the National Electrical Manufacturers Association indicated recently.

January sales were considerably ahead of last year but February sales slipped behind. The total for this year was 912,027 units as compared with 837,112 last year. January sales for 1951 and 1950, respectively, were 488,607 and 375,856 while February sales were 423,420 and 461,256.

Foreign sales were considerably higher than last year. During January and February, 1951, they were 43,089 as compared with 22,369 for the same months of 1950. A factor here was the import restrictions Canada had in effect last year. Canadian sales this year were 12,323 units as compared with only 4 last year.

Much of the increase for the 1951 period over the 1950 period was found to come from sales of larger capacity units. Of refrigerators of 10-cu. ft. capacity and larger, 225,613 were sold in the first two months of 1951 where only 152,375 were sold in the same period of 1950.

### 4 Board Members Resign From Super-Cold Corp.

LOS ANGELES—Changes in the executive line-up of Super-Cold Corp. following the mass resignation of four members of the company's seven-man board of directors have been announced by N. A. Kessler, president and chairman of the board.

The four who resigned from the board include B. R. Glazer, executive vice president; George R. Lindahl, Jr., vice president and general sales manager; Albert Rebbel, manager of the international division, and Frank Fallon, manager of Super-Cold Southwest Co. of Dallas.

Besides resigning from the board, Glazer and Lindahl also gave up their positions with the company.

The resignations apparently culminate a long-standing disagreement between members of the board and the majority stockholder.

Frederick R. Waingrow has been

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### Wholesalers Ask Mfrs. For Price Guarantees

DETROIT—Very little time elapsed between the announcement of Ceiling Price Regulation 22 controlling manufacturers' prices and the bombardment of manufacturers by wholesalers and distributors seeking some sort of guarantee that they would be protected against any price change caused by the order.

Reports from the housewares field indicate that some distributors went so far as to cancel or stop all orders until the new ceiling prices were determined.

Several manufacturers, however, immediately issued statements of policy that protected wholesalers against any decrease in manufacturer's price on shipments made between April 25, when CPR 22 was announced, and May 28, when the new ceilings will take effect.

Price increases, it was noted, cannot be made until 15 days after the manufacturer has filed his request for such increase with OPS, unless OPS disapproves the increase in the meantime. Some manufacturers indicated that these increases would not be retroactive.

Among the first manufacturers in the housewares field to make such statements of policy were Landers, Frary & Clark; Nesco, Inc.; Hamilton

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### Hotpoint Automatic Range To Cut Dealer Inventories

CHICAGO—A new automatic electric range with lighted pushbuttons is being introduced by Hotpoint, Inc.

The company said the range was brought out "to allow dealers to increase their profits on 'deluxe' merchandise by reducing the number of top models in inventory and concentrating their sales effort on one leader."

Designated model RD-12, the range will retail for approximately \$50 less than previous models in this class, yet combines the best sales features formerly found in three different pushbutton styles, according to Edward R. Taylor, general sales manager. Shipments to dealers will begin this month.

While it incorporates the use of

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## 'Quit Crying In Each Other's Beer, Get Down to Basic Selling', Business Told

DETROIT—With consumer buying on the upswing and the business outlook good, appliance people should quit "crying in each other's beer" and "get down to basic selling."

That was the combined advice recently offered by a manufacturer and a distributor of household appliances.

"Indications point to a rising trend of consumer buying that all of us will greatly welcome," said The Harry Alter Co., Chicago distributor, in a recent newsletter.

"It is about time that we in the radio, television, and appliance business became a little optimistic. There has been too much gloom, too much defeatism, and too much 'crying in each other's beer.'

"How any man can sell goods going around with a long face is beyond us. Wholesale men, retail salesmen, dealers, manufacturers, and distributors have been standing around figuratively wringing their

### Refrigerator IAC Seeks Tooling Cost Relief

WASHINGTON, D. C.—Three changes in Ceiling Price Regulation 22 to ease difficulties faced by refrigerator and freezer manufacturers were sought last week by the household refrigerator and freezer industry advisory committee.

The committee requested the changes in a meeting with officials of the Office of Price Stabilization.

The changes would:

1. Permit manufacturers to file their suggested retail and wholesale prices along with their own ceiling prices.
2. Permit them to include increases in tooling costs—a major production factor—in the new ceiling prices.
3. Provide relief from increased costs of steel, which during the pre-Korean base periods was purchased

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### ASRE Spring Meeting In Detroit May 27-30

DETROIT—The 38th spring meeting of the American Society of Refrigerating Engineers will be held in Detroit from Sunday, May 27, through Wednesday, May 30, 1951.

Headquarters for the meeting will be the Detroit Statler where the nation's leading refrigeration engineers will convene to learn the latest in refrigeration techniques and the situation regarding shortages of critical materials so necessary in the manufacture of refrigeration equipment.

Technical sessions and specialized conferences will start Monday morning, May 28; meetings of various ASRE committees will begin on Sunday, the preceding day.

In addition to speakers presenting technical papers at the meeting, George Romney, vice president of Nash-Kelvinator Corp., will address the Welcome Luncheon on Monday noon, and George F. Taubeneck, editor of AIR CONDITIONING & REFRIGERATION NEWS, will speak, following the Tuesday morning technical session, on the critical shortage of materials and the effect on the refrigeration industry.

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## REMA Cinches All-Industry Show Plans

### Siegfried Elected Pres.; Defense Committees Report Progress at Hot Springs

By Phil B. Redeker

HOT SPRINGS, Va.—The All-Industry Refrigeration & Air Conditioning Exposition will be held on the scheduled dates of Nov. 5-8 at Navy Pier in Chicago barring some major national crisis, and sale of space for the Show has already assured its being the largest in the history of the event, it was stated here by R. H. Israel, Virginia Smelting Co., retiring president of Refrigeration Equipment Manufacturers Association, sponsor of the show, during the association's annual meeting.

No government agency has made a claim for the Navy Pier, which was one possible stumbling block in the path of the show.

New president of REMA for the coming year is W. A. Siegfried, Superior Valve & Fittings Co. R. S. Sears, Lynch Corp., is vice president; John Dube, Alco Valve Co., is treasurer; and L. C. McKesson, Ansul Chemical Co., is secretary.

For the All-Industry Show, a total of 4,000 hotel rooms have been guaranteed. The Sherman hotel will be REMA headquarters at the show, with 1,000 rooms and 78 suites available. Those planning to make reservations are urged to get their requests in quickly to prevent releases to the Petroleum Institute convening at Chicago on the same dates.

L. C. McKesson, show chairman, said that a total of 64,000 sq. ft. of floor space is available at Navy Pier. Of this, a total of 45,506 had been contracted for up to the middle of April by 157 companies in the industry. Total amount of space

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### Industry Fights NPA Plan To Limit Durable Goods Output on Unit Basis

WASHINGTON, D. C.—Proposal by the National Production Authority to limit the production of consumer durable goods in the third quarter on a unit basis instead of restricting the over-all use of steel was unanimously opposed by the Industry Advisory Committee representing manufacturers of household refrigerators and home freezers at a hearing last week.

NPA's proposal would restrict production in the third quarter to 70% of the unit production in the first half of 1950. Present restriction limits use of steel to 80% of the 1950 base period.

IAC members told NPA representatives that they thought the present restrictions on critical materials were adequate to safeguard national interests.

It had been indicated, however, that NPA was planning further cuts in the third quarter.

Modifications in NPA's order M-47 on steel to permit manufacturers to shift production within a wide range of appliances were urged at the meeting by the IAC group.

Removing separate classifications of items in Section 4 of List A of the order and permitting a manufacturer to use his total allowable per-

(Concluded on Page 4, Column 3)

### Mfrs. Excise Tax Payments For March Top Last Year

WASHINGTON, D. C.—Manufacturers of mechanical refrigerators, air conditioners, etc., paid more than twice as much excise tax to the Bureau of Internal Revenue during March than they did in the same month last year.

Figures released by the bureau showed that these producers paid \$9,721,874 in excise taxes last March and \$3,732,443 in March, 1950.

Manufacturers of electric, gas, and oil appliances paid \$11,057,124 in excise duties in March of this year as compared with \$6,596,605 in the same month last year.



## Monthly Retailers' Sales Data Could Help Factory Plan Production—Blees

LOS ANGELES—Crosley Corp. could do a better job of scheduling production in line with major appliance merchandising trends if retailers would voluntarily submit regular monthly sales reports, according to W. A. Blees, general sales manager.

Addressing 30 leading dealers at a recent meeting here, Blees said such figures would help the company minimize the danger of overproduction—a serious problem in the major appliance industry.

"We must end doing business promiscuously at both retail and manufacturer levels," he declared. "The average retailer should carry two white goods lines and two television lines. The manufacturer must reappraise his franchising program."

Blees had these comments to make on other phases of the business:

On prices—"Labor won't take less money and materials still cost us the same, so there is no chance for lower prices generally."

On sales promotion: "Now is not the time [for a big advertising splurge], but it's all in the works to smack hell out of the market this fall, barring a war. That will be the time and it will be good for all our competitors, too."

On the possibility of Regulation W being killed: "I doubt whether that can be done. In fact, there are indications we may have even more controls and more dislocations."

On consumer demand: "The public is tired. It has been sustaining

for so long an express train speed that it must slow down. However, the desire to buy is just as strong as ever.

"The dealer must keep working. He should get outside the store, and not depend solely on his advertising. This business was solidly built on talking with people," Blees further emphasized.

Americans still have plenty of money to spend, Blees asserted. He predicted an upswing in white goods sales in July and a rise in television business during the month of September.

### 'Holiday House' Equipped with General Range-Refrigerator

QUOGUE, L. I.—Holiday House, *Holiday* magazine's model home here is equipped with a combination range-refrigerator manufactured by General Air Conditioning Corp. of Los Angeles.

George Nelson, architectural consultant of *Holiday*, built into the project a unique "Garden Room," which is apart from the main house and designed for year-round recreation and entertaining.

It is in this room that the attractive combination unit, the General Chef, provides range and refrigerator.

In addition, there is a bar, small sink, and handsome brazier for barbecuing.

## G-E Considers Sites for Proposed 'Appliance Park'

LOUISVILLE, Ky.—Two sites here are under consideration as locations for General Electric Co.'s proposed multimillion-dollar "Appliance Park," it was recently revealed by Clarence H. Linder, general manager of the company's newly-formed Major Appliance Department.

One site is off Preston highway near Minors lane. The other is off Fegenbush lane near Buechel.

Linder stressed that no decision has yet been made on whether or not G-E will build its Appliance Park in Louisville.

"The decision to locate here," he explained, "depends on the solution of certain engineering problems connected with the sites and on the community's answer to the problems on zoning, housing, transportation, water, realty values, etc."

He said it is expected that a decision will be reached some time in May.

The new facilities, when built, will be used for production of jet engine parts. Upon termination of the national emergency, the plant will be converted to major appliance output.

Linder said the new plant, if constructed here, will consist of six factory buildings, an administration building, and other structures, located on a 98-acre site. The project would employ an estimated 16,000 workers.

It was disclosed that, among other things, the Park will need 20 miles of railroad track, facilities for parking 4,000 automobiles, a flow of 300 freight cars and 150 trucks a day, and 42 miles of conveyor belts.

## No More Steel for Stainless Steel Producers Under CMP

WASHINGTON, D. C.—A request by stainless steel producers that they be allotted more steel when the Controlled Materials Plan goes into effect July 1 has been turned down by the National Production Authority.

The NPA told members of the Stainless Steel Industry Advisory Committee that even though their production will be covered by CMP, there is just not enough steel available for additional allotments to them.

## Hotpoint Program of Factory-Built Itinerant Displays Pays Off

CHICAGO—Hotpoint, Inc. is stepping up its itinerant display program in support of complete kitchen and laundry promotions in major dealer stores, department and furniture stores, and electric companies, Edward R. Taylor, general sales manager has announced.

He said that the displays were used in more than 100 kitchen promotions in all parts of the country in 1950, with a "very favorable" sales return at each showing.

The itinerant displays are designed and built by the factory, and then are scheduled through the 11 sales districts for showings in key stores. Taylor said that the displays are scheduled weeks ahead and are constantly shuttling from city to city.

In 1950 the company had 38 displays that included animated individual appliances as well as complete kitchen units. This number has increased to 43, and obsolete displays have been replaced.

The itinerant displays have been used or are being scheduled by Hotpoint at the January and July furniture markets, Builders Show, J. L. Hudson Housewares Exposition, Home Comfort Show, and Home Economics Convention.

One of the new displays compares old-fashioned and modern methods of home laundering, featuring the new moisture-free drier (Model LD-3).

An all-electric kitchen and home laundry trailer was on tour throughout 1950, and appeared at 59 shows, expositions, and fairs in the TVA territory, as well as other parts of the country.

The "electric living on wheels" exhibit has side panels that open up to give a complete view of the interior. When the trailer is on exhibit, all appliances are connected to power and water lines for operating demonstrations. The trailer display is scheduled for a continuing tour during 1951.

## Seattle To Hold Public Hearings on Revision Of Refrigeration Code

SEATTLE—Public hearing on a proposed revision of its refrigeration code will be held by Seattle on May 8, announces Clarence F. Massart, chairman of the City Council's public safety committee.

The hearing had originally been set for an earlier date, but the corporation counsel of the city had requested a delay to complete drafting of the new ordinance, it was stated.

Refrigeration contractors and others interested in the new ordinance have been invited to attend the public hearing and help shape revisions of the code.

At a recent discussion of the problem, Dr. Sanford P. Lehman, director of Seattle-King County Department of Public Health, declared that a new code was in order because the existing ordinance is 20 years old and thus does not take into consideration the new equipment, materials, and techniques developed by the refrigeration industry.

## Budlock To Open New Supply House In Birmingham, Ala.

BIRMINGHAM, Ala. — Formal opening of the new refrigeration supply house established here by Budlock Refrigeration Supply Co., Inc. will be held on May 19, Ian F. Lockhart, president, announced recently. Address of the firm is 210-212 S. 18th St.

## Black Market Steel Forcing Connecticut Contractors Into Corner

HARTFORD, Conn.—Connecticut sheet metal and roofing contractors are forced to pay about double the regular price for the materials they need because of a "vicious, unbridled" black market existing in the state.

Francis E. Carroll, secretary of the Associated Sheet Metal, Roofing & Insulating Contractors of Northern Connecticut so charged before a subcommittee of the Select Committee on Small Business of the U. S. House of Representatives.

Carroll said only one sixth of the metal used by the state's sheet metal and roofing contractors is coming through normal channels. Thus, he declared, the industry is forced into the black market "to avoid extinction."

He asserted that contractors have to pay 20 to 24 cents a pound for steel products they used. The legitimate market price for these items, he said, is 12 to 14 cents a pound.

A committee member demanded that the committee be given information and names of the black market operators so action can be taken. If this were done, Carroll answered, the contractors' only source of steel would be cut off.

Carroll pictured this predicament of contractors:

If sheet metal contractors have to continue paying black market prices, they will go out of business. If they can't get black market steel, they can't stay in business. He added: "They are licked either way."

Carroll recommended that steel be traced from the mill to the black marketeer and that the steel industry be allowed to appoint an investigator with authority to do so.

## Service Calls Go Up as Repair Parts Diminish

CHICAGO—Repairmen soon will see a marked increase in repair calls for home appliances and, unless Government priorities are granted for replacement parts, many of the home devices won't be properly maintained.

So predicted Raymond J. Hurley, board chairman of Thor Corp., at a convention meeting of the Appliance Parts Jobbers, Inc., at the Sherman hotel here.

Hurley urged the parts men to ask the National Production Authority for priorities on materials for replacement parts "in an amount sufficient to insure proper maintenance standards."

The washing machine industry alone sees a need to increase repair parts production 75% over 1950 levels, he said.

Some shortages have already developed in critical parts and these will grow unless a greater supply of materials is forthcoming, he predicted.

"This increase in service calls will not come because the appliances are basically faulty, but because many of them are growing old and tired," Hurley declared. "For example, more than 13,000,000 washing machines now in use are nine or more years old. Under normal conditions, they would be eligible for early replacement."

## Charlotte RADA Sponsors Frozen Foods Forum

CHARLOTTE, N. C.—A "frozen foods forum," designed to stimulate local interest in home freezers, will be staged in the Charlotte Woman's Club on May 10 and 11.

The Charlotte Radio and Appliance Distributors Association is sponsoring the event and is promoting it to home freezer owners and prospective owners.

The forum will consist of an educational program conducted by Miss Nita Orr, home economist in food conservation in the state cooperative extension program at Raleigh, and freezer demonstrations by state and local home agents.

Miss Orr will discuss food conservation, proper methods of preparing and using frozen foods now on the market, and how to serve various types of foods at meals.

Forum sessions will be held from 10 a.m. to noon and from 2 to 4 p.m. on each of the two days.

# BIG INSIDE . . . COMPACT OUTSIDE PROFITABLE ALL-AROUND!



### DISPLAY CASE • Model DC-16



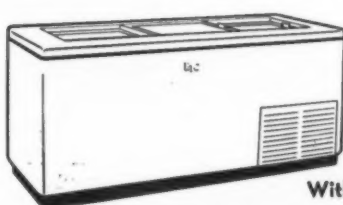
MODEL DC-16-3D  
With superstructure  
and colorful,  
3-dimensional pictures.

You'll find big-case capacity built into the compact frame of Brewer-Titchener's DC-16 Display Case. Little wonder that this smartly-styled cabinet is among the most popular in the BTC line!

**SO MUCH STORAGE SPACE** 16 cubic feet of storage in a floor area only 76" by 28" — thanks to BTC's new vapor-sealed insulation!

**SO SMART LOOKING TOO** Trim lines, gleaming-white finish and stainless steel capping make it an outstanding attention winner!

Brewer-Titchener's DC-16 offers all these wonderful features too — all-steel Bonderized cabinet, three Thermopane rolling glass lids, 1/2 H.P. hermetic compressor, as well as a 5-year compressor and 2-year food spoilage warranty. Learn the full story on handling this profitable display case by writing Brewer-Titchener today!



MODEL DC-16-3  
Without superstructure.

**THE  
BREWER-TITCHENER  
CORPORATION**  
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# PHILCO...First Choice in Room Air Conditioners

FOR 1951, Philco again is *setting the pace* in the Room Air Conditioner industry. New advanced features! Finest modern styling! Unequalled values! There's a model for almost any size room . . . for almost any type of installation. And every Philco, from the ½ HP Window Sill unit up to the 2 HP Water Cooled console brings new heights of efficiency—the finest, most dependable Room Air Conditioners ever built!

No wonder, wherever Room Air Conditioners are sold, Philco is the **FIRST CHOICE**! No wonder, leading dealers everywhere are choosing Philco as the one line to *concentrate on* for the greatest sales and profits in 1951.

**Leads the  
Industry  
in Sales and Value**



**New 1951 Window Sill Model**

Utmost efficiency in compact size! Famous Philco Sealed Power System . . . amazingly quiet and vibrationless . . . complete system sealed in oil. Choice of Two-Tone Tan or Ivory finish cabinet. **FIVE YEAR WARRANTY.**

**Brings Relief from the Heat WHERE IT'S NEEDED MOST!**



Makes possible cool, quiet hospital rooms



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Cuts down absences of office personnel



Cool Comfort aids dentists and physicians



Invites restful sleep plus relief for Hay Fever sufferers



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Ends summer slumps in retail business

**New  
1951 Models  
Now Available**

for rooms from  
250 up to 1500 sq. ft.  
in floor area

**PHILCO . . . THE MOST PROFITABLE FRANCHISE IN THE APPLIANCE FIELD**









Harold Maloney, Frigidaire branch manager in Detroit, congratulates Walter DeMattia (right) who led commercial dealers in beating their 1950 quotas.



Harry Ward (left), manager of industrial sales for Frigidaire, presents an award to William Closey, sales engineer who was first in the Detroit branch.

## Frigidaire Dealers Win Awards

DETROIT—The 10 commercial dealerships throughout its territory who reached or exceeded their quotas for 1950 were honored recently by the Detroit branch of Frigidaire Sales Corp. which took the "100 Percenters" to the opening ball game of the Detroit Tigers and topped it off with a dinner and presentation of award plaques.

Five commercial salesmen who had likewise topped their quotas were similarly honored, but instead of a plaque they received company data books.

Leading Frigidaire commercial dealers in the state of Michigan who topped their quotas included Walter DeMattia, Vic Fabian, J. R. Miller, Al Ellerbusch, Sven Sogaard and William Debo, all of Detroit; Art Dehn, Midland; Bernie Griner, Cope-mich; Gordon Collison, Battle Creek; Paul Garthe, Traverse City; and Clayton Pettingill, Cadillac.

DeMattia was the top dealer in percentage over quota, as was William Closey among the branch sales engineers. Other branch men who topped their quotas were Carl Hoops, Stanley Hill, Ralph Day, and Tom Murray.

Presentation of the 100 Percenter plaques was made by Harold Maloney, branch manager, while Harry Ward, recently named manager of industrial sales at the Frigidaire factory in Dayton, gave the awards to the branch men.

Ward was until recently regional commercial sales manager in this zone, and his recently appointed successor, J. F. Calvin, was also on hand for the event.

Several of the dealers present had entered and won prizes in the contest for unusual air conditioning installations sponsored recently by AIR CONDITIONING & REFRIGERATION NEWS. On behalf of Frigidaire, George Poggen, Jr., commercial sales manager for the branch, presented prizes to these winners to match those received from the NEWS.

Also participating in the day's

events were David Charles, assistant to Maloney; and the following branch officials: Joseph Ridding, comptroller; Charles Ott, promotion manager; Tom Graham, commercial sales promotion manager; Joseph Mendel, who handles the ice cream cabinet accounts; and Robert Isbell, sales engineer.

## NPA Industry Divisions Realigned To Give Directors More Policy Determining Power

WASHINGTON, D. C.—Manly Fleischmann, Administrator of the National Production Authority, has realigned NPA's industry divisions to group related units under four operating heads and give industry division directors greater representation in policy determination.

Up to now, all NPA industry divisions administering orders and regulations governing the production and distribution of the nation's goods for civilian and defense purposes have operated in an Industry Operations Bureau, which no longer exists.

Under the new organization, there will be 35 divisions dealing with industrial production, instead of the previous 20 product groupings, it was explained. They are grouped according to their relationship and industry under four assistant administrators who will constitute, in effect, an executive committee.

The changes will align the administrative structure of NPA to conform with established industrial organization and also make possible close working relationship between NPA officials and industry executives in carrying out the recently announced Controlled Materials Plan, Fleischmann said.

Two of the four new bureaus thus established are the Textile, Leather, and Specialty Equipment Bureau, headed by Horace B. McCoy, and the Industrial and Agricultural Equipment Bureau, headed by Franz T. Stone.

Included in the former bureau is the Consumers Durable Goods Division, which takes in household appliances. The latter bureau includes the General Industrial Equipment Division, which presumably covers commercial refrigeration and air conditioning.

## Apex Mfg. Awarded Tank Assembly Contract

CLEVELAND—Mechanical and electrical tank assemblies will be manufactured by Apex Electrical Mfg. Co. in its Cleveland and Sandusky plants under a new defense contract received by the company, it was announced recently by C. G. Frantz, president.

Earlier, Apex had received a contract to turn out elevating and trans-versing mechanisms for airborne guns.

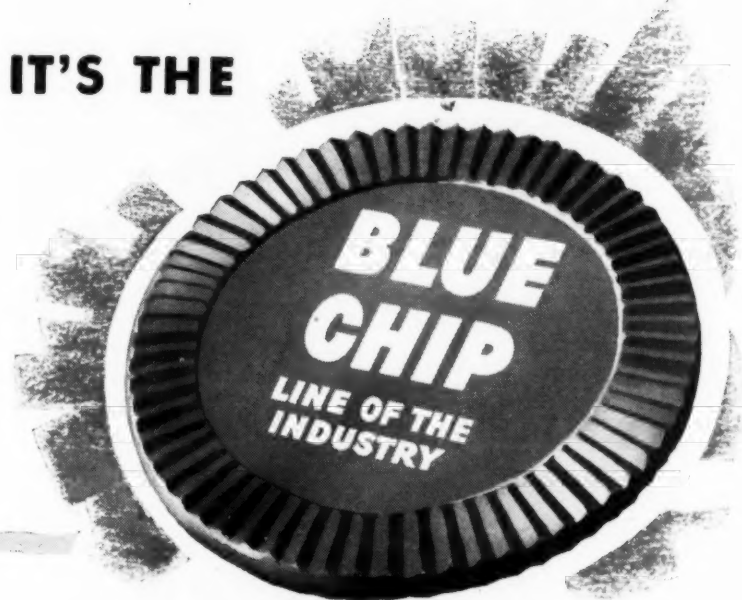
This work will be done for Aetna-Standard Engineering Co., Warren, Ohio.

Frantz said defense contracts obtained by Apex now total more than \$10 million. Production on the orders will get under way early in the fall, he stated.

He said the defense orders, in themselves, will not interfere with the company's production of consumer goods but that governmental controls and regulations will reduce output.

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## Explosion-Proof! COOLERS

Because our industrial capacity is expanding for defense mobilization, architects and consulting engineers now have many high-priority jobs on the drawing board. Many of these plants will require Explosion-Proof Water Coolers for installation in hazardous locations—such as atmospheres containing explosive vapors, gases or coal and grain dusts. Now is the time to see the architect and consulting engineer. Tell them and sell them these Westinghouse features:

Stainless Steel Top . . . Foot Pedal Control . . . Compact Design . . . 5-Year Guarantee Plan.

Underwriters' Laboratories Listing . . . for Class I, Group D and Class II, Groups F and G, hazardous locations.

Westinghouse and only Westinghouse has all these features in Explosion-Proof models.

WESTINGHOUSE ELECTRIC CORPORATION  
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YOU CAN BE SURE...IF IT'S Westinghouse

... of course, it's electric!



MODELS WWE8A AND WWE14A

So, it's sell Westinghouse! Sell the leader! Ten models available, including heavy-duty, air-cooled, water-cooled and explosion-proof Coolers. Westinghouse has always been a leader in sales to industry. In the months ahead, sell the Cooler that already has high acceptance from Government and industry.

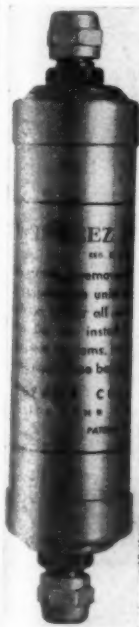
### JUST ASK US

For "easy-to-get" product information . . . use coupon on "What's New" page.

Use Key No. for fastest service.

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Outperforms All Dehydrators by Test

Never Stores Water

Removes to 1 1/2 oz. Physically

Neutralizes All Acidity

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SEND FOR BROCHURE

BERNA CORP.  
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Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

SACRN



## How To Sell Packaged Kitchens

1. Install One In Your Own Home
2. Set Up Store Display
3. Advertise As a Specialist
4. Sell Appliances, Installations As One Unit

CHICAGO—The appliance business is wide open for specialization, and kitchen planning is one specialized area that hasn't been scratched.

That's the opinion of Edward J. Teterus, owner of Teterus Appliances here who, after only five years in the appliance business, has a simple working formula that sells complete kitchens:

1. Learn your appliances by installing a complete kitchen in your own home.
2. Set up a display kitchen in the store.
3. Advertise to established yourself as a specialist in kitchen planning.
4. Sell the appliances and installation as a package.

### Basic Rules—

#### But They Work

Basic? Sure, but it works. Last year he installed 10 complete kitchens in the Chicago area, one as far away as 40 miles. Teterus' store is not large or fancy, but, as he points out, "you don't need a big store to sell complete kitchens."

The store occupies a corner location in a commercial neighborhood several miles west of Chicago's "Loop," contains approximately 1,000 sq. ft. of floor space, and is small enough to be handled by one salesman at a time. When he is out on calls, Mrs. Teterus takes over.

Once a dealer is successful in establishing himself as a kitchen planning specialist, satisfied customers will recommend him to new prospects, Teterus finds. He credits a listing in the Chicago classified "Red Book" as his best advertising. For this service, he pays only \$44 a month, and he finds it more productive than billboard or newspaper advertising.

One kitchen installation not only sells more kitchens, it gets Teterus more business on the "newer appliances" like dishwashers and Disposalls. He never quotes an appliance price without telling the customer what it will cost to have it installed, and he always makes the necessary arrangements. As logical and fundamental as this may seem, Teterus has found that customers are pleas-

antly surprised to learn that installation will not be left up to them.

### What His Listing

#### Tells the Prospect

His listing reads, "Teterus Appliances. Beautify Your Kitchen with Hotpoint Steel Kitchen Cabinets. Planning, Designing, and Installing of Efficiency Kitchens Integrated with Dishwashers, Garbage Disposall Units, Kitchen Sinks, Refrigerators, Ranges. All Units and Appliances on Our Showroom Floor." Besides this listing under "Kitchen Cabinets," Teterus also appears under "Hotpoint Electric Appliances."

His windows identify the store as kitchen planning headquarters, and the same theme appears on his stationery, calling cards, and billing forms.

A complete kitchen display is the center of attraction on the floor. It includes a pushbutton range, automatic dishwasher-sink with Disposall, refrigerator, and the base and wall cabinets. In addition to this, Teterus also has a five-foot "Work-saving Center" which can feature a laundry or appliance ensemble.

Most of his prospects come from the telephone book listing. Teterus makes an appointment to call at the house with an assistant who takes all measurements and gives an accurate cost estimate of the package installation.

### 'Housewives Impressed By Specialist...'

"Housewives are impressed by a specialist who knows what he's doing," Teterus said. "The house call is important, and when a complete kitchen is at stake, it's really a two-man job. While the installer takes the kitchen measurements, I'm busy selling the prospect on the appliances she should have. A competent assistant who takes the measurements quickly and accurately instills confidence in the customer."

Teterus has discovered that the best time to call at the house is in the evening when the husband and wife can go over the proposed kitchen modernization together. Part of his standard equipment on these

calls is a "Mini-Kit" with which he "builds" the new kitchen on the dining room table after measurements have been taken. This portable kitchen equipment consists of a complete array of miniature matched appliances, movable walls, a floor that is scored in one-inch squares for easier measurements, and a camera.

### Photographs 'Dream Kitchen' For Prospect To Show

Adjusting walls, doors, and windows to simulate the existing kitchen arrangement, Teterus then "installs" the miniature appliances and cabinets until the housewife can see how her kitchen will look before actual remodeling begins. Frequently he photographs the "dream kitchen" and leaves a picture the housewife can show to her friends. Before beginning the project, however, Teterus has an accurate perspective drawing prepared.

He doesn't advocate free kitchen planning, because of the time, work, and expense involved. He makes a charge of \$5 to \$10—for the planning, which is credited to the customer when the installation is finished. He finds that a little "earnest" money weeds out the serious from the curious prospect. So far credit or financing has been no problem for Teterus. His kitchen business all

has been done on a cash basis, further indication that people have money for appliances.

### Before and After Pictures Dramatize Contrast

Plan drawings of a new kitchen have little meaning for the average housewife, Teterus had found. For this reason he makes a practice of taking "before and after" pictures of remodeling jobs. These pictures are more effective than any sales story in dramatizing the contrast between the modern and old-fashioned kitchen, Teterus said. Similarly, the Mini-Kit permits the translating of ideas into tangible form the customer can understand.

To learn the basic fundamentals of kitchen planning, Teterus attended one of the postwar schools which was conducted at Hotpoint's Chicago headquarters.

Here he received instruction from factory specialists on perspective drawing, use of the Mini-Kit, how to arrange appliances around "work-saving centers," proper location of equipment in relation to doors and windows, etc. Teterus found this instruction very valuable, and has since broadened his knowledge through practical experience.

### Quote Price for Entire Job To All Customers

Prices are always quoted for the complete installation so the customer deals with a single merchant. On each job, Teterus contracts the necessary plumbing and electrical work through the same mechanics. This assures uniform quality of workmanship and customer satisfaction. He is prepared to recommend

any structural changes that might be necessary to improve the functional efficiency of the kitchen. Some jobs call for recommendations of color schemes, floor coverings, and curtains.

### Skeptics Taken to Dealer's Own Home Kitchen

Sometimes customers who are skeptical about an automatic dishwasher or Disposall are taken to Teterus' house where his wife puts her own all-electric kitchen through its paces. "I've never seen a time when an actual demonstration didn't win over the customer," he reports.

One of his best selling points, he says, is that his Hotpoint cabinet line, with more than 75 different items, as well as fillers and accessories, will fit any type of kitchen installation. A growing trend, he finds, is wider use of continuous counter tops that give a "custom" appearance to a finished job.

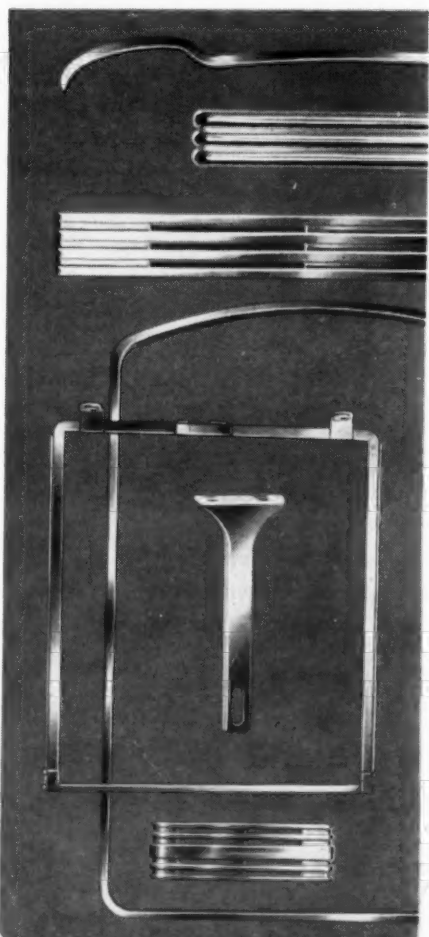
Although specialization in kitchen planning entails "some extra headaches and hard work," it's well worth it, Teterus feels. He cites a 33% increase in his 1950 business over the previous year, and he's looking forward to an even bigger and better kitchen year during 1951.

### MISSING SOMETHING?

More and better useful information is yours for the asking. See "What's New" page.



## BEAUTY in BALANCE



● It's true that good performance must be matched by good looks in today's competitive market. For the beauty of your product to be in balance, mouldings must be perfect. John Lees can supply your needs. We make thousands of standard shapes and special sections for decorative trim, frame assemblies, functional assemblies, channels and other applications. Mechanical or electrolytic polish. Write today for our catalog and our folder on electrolytic polishing.

**JOHN LEES**

DIVISION of THE SERRICK CORPORATION  
Kilgore Avenue, Muncie, Indiana, U.S.A.



Another good reason to see

# THE GREAT N



### NEW SERVEL

## Royal Series

The aristocrats of the new Servel line. They're bigger inside... need no more space outside. Luxuriously equipped with full-width evaporators and twin Dew-Action Vegetable Fresheners.

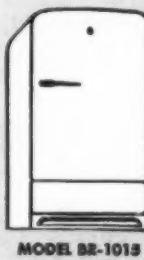
MODEL BR-917

MODEL BR-816

MODEL BR-1118—Volume—11.5 cu. ft. New-design cabinet with Newton exterior. 2 glass-covered Dew-Action Vegetable Fresheners. 5 "Quick-Release" Ice-Cube Trays. Full-width evaporator with exterior door.

SERVEL  
*Deluxe*  
SERIES

... AND FIVE MORE COMPLETELY NEW MODELS FOR 1951



MODEL BR-1013



MODEL BR-819



MODEL BR-615



## Trend to Larger Size Refrigerators Reflected In Home-Building Plans

CHICAGO—The trend to larger refrigerator sizes is reflected in allowances now being made by builders in small, mass-produced houses—indicating that even in minimum, low-cost housing, kitchens are designed to accommodate 8-cu. ft. boxes.

This was revealed by William F. Ogden, manager of product planning, Hotpoint, Inc., in announcing results of a survey recently completed.

A check of 148 existing homes made through distributor installation and servicemen in all parts of the country showed that 91% have space enough to accommodate refrigerator widths of all types of 8-ft. models now on the market. An earlier survey found that only 59% of 104 house plans allowed for these sizes.

An analysis of refrigerator cabinet sizes shows that the 8-cu. ft. models of all manufacturers now on the market have widths varying from 29 1/2 in. to 31 1/2 in., according to Hotpoint.

"While the manufacturers have made great progress in increasing interior storage space in the same outer dimensions, homeowners are buying larger sizes than they did pre-war," the company said.

"Before the war 6-ft. boxes were in largest demand, accounting for 78% of industry shipments. In 1950 this size represented about 10% of the shipments. Meanwhile, the 8-ft. size, which was 8% of industry shipments in 1940, has increased to about 40%."

Ogden believes these figures point up the importance of close cooperation between manufacturers and builders to assure customers a choice in refrigerator sizes in new kitchens.

"It is important that builders recognize the need for approximately 36 in. of space to accommodate modern refrigerators in larger sizes, even in the mass produced, 'low-cost home,'" he said.

### Electric Co. Sets Flat Rate for Installations

CHATTANOOGA, Tenn. — The Electric Power Board of Chattanooga has announced that it will now install electric clothes driers on its lines at a cost of \$20 to the dealer selling the drier.

The board said that it reserves the right to make exceptions in cases where additional capacity must be added at the meter center.

The board also handles the installation of electric ranges for \$25 and electric water heaters for \$17.50. The dealer delivers the appliance to the purchaser's premises and the board assigns the installation job to one of 28 licensed electrical contractors who are on call for this work.

Chief advantage of the new drier installation policy, according to the board, is that the dealer can quote a firm price to the prospective purchaser immediately without waiting for an estimate of installation cost.

## Appliances Star with 'Big Show' Promotion

SEATTLE—The popularity of the hour-and-a-half "Big Show" emceed by Tallulah Bankhead was converted into an appliance merchandising asset at the Bon Marche here during a recent week.

Building a special appliance promotion around "The Big Show," the Bon Marche used a series of eight and four-page newspaper sections to invite Seattle residents to visit its television and appliance departments during the week for special "Big Show" events.

Special arrangements were made with Miss Bankhead and the National Broadcasting Co. for the stunt. The show's directors cut three records, with Meredith Willson's music, with bits of entertainment by famous stars, included on the records. These were played over public address systems in the appliance departments throughout the entire week, giving the illusion of "The Big Show" right in the store.

In addition, eight display windows around the store were utilized to show Miss Bankhead in life-size poses, quipping with stage and screen stars who have appeared on her programs. The "dialogue" in each instance was represented by "cut-out" blurbs.

Factory representatives for every line carried by the Bon Marche appliance departments were on hand and "starred" on the store's "Big Show." Result of the event was an all-time record for appliance and television sales during a single week.



OUTDOOR DISPLAY of traded-in appliances serves two purposes for Warren Bragdon, Denver dealer: It is an eye-catcher, therefore, a sales builder. It also gives him more space inside his store for new merchandise.

## Used Appliances 'Corralled'

### Colorado Dealer Displays Trade-Ins In Fenced-In Area on Sidewalk

DENVER — Like many another dealer, Warren Bragdon was finding it difficult to effectively display used refrigerators due to lack of space.

Rearrangement of displays resulted in overcrowding, which spoiled the appearance of the Frigidaire outlet here. Efforts to get homeowners to sell their trade-in boxes from their homes, with the store writing and paying for classified advertisements, likewise proved unsatisfactory for the company.

Finally, the head of Bragdon's, Inc. found the answer—outside the store. Remembering the success of outdoor stores in California, he built a

stainless galvanized mesh fence around a portion of the large sidewalk space along the left side of the building. This provided an area 45 ft. long and 25 ft. wide, large enough to accommodate some 50 used appliances.

The "corral" now is such an effective merchandiser that Bragdon is frequently out of stock, rather than being faced with a pile-up of used boxes.

Through this simple change, a top advertising asset was created, Bragdon said, adding that the fence keeps the sidewalk display from appearing "sloppy."

### Three-Way Transfer

### Tropic-Aire Buys 'Everhot' Roaster Line; McGraw Electric Buys Tropic-Aire

TOLEDO—Swartzbaugh Mfg. Co. here has sold its "Everhot" line of electric roasters to Tropic-Aire, Inc., Chicago manufacturer of bus air conditioning and radar equipment, it was announced recently.

Tropic-Aire, in turn, is being purchased by McGraw Electric Co., according to Max McGraw, president of McGraw Electric and a director of Tropic-Aire.

He said it is planned to manufacture the Everhot roaster in the Meriden, Conn. plant of Manning, Bowman & Co., a division of McGraw Electric.

Another McGraw Electric division, Toastmaster, is scheduled to handle sales of the roaster.

Tropic-Aire, which recently purchased Manning-Bowman's Meriden plant, acquired the Everhot tools, dies, inventories, and goodwill from Swartzbaugh Mfg. but not the latter's plant or machinery, it was announced by Charles E. Swartzbaugh, president of the Toledo firm.

Swartzbaugh said his company will concentrate on production of its line of industrial and institutional food-handling equipment. The concern hopes to secure a number of defense contracts, Swartzbaugh further added.

### Evansville Helps Servel Celebrate Refrigerator's Silver Anniversary

EVANSVILLE, Ind.—The "refrigerator capital of the world" went all-out recently to celebrate the 25th anniversary of one of its products, the gas refrigerator manufactured by Servel, Inc.

Special editions of the Evansville newspapers were published, carrying congratulatory messages from Servel's industrial neighbors. Other refrigerator manufacturers in Evansville, contributing to the city's new-chosen title, are Coldspot and International Harvester. Total employment of the three firms is approximately 15,000.

More than 30 downtown merchants continued Servel silver anniversary displays in their stores all week. In-plant celebrations were carried on during the day by Servel employees.

D. A. Huley, president of the Lone Star Gas Co. and the American Gas Association, was the principal speaker at a celebration banquet arranged by the Evansville Chamber of Commerce.

Other speakers included Earl Heseman, president of the Chamber of Commerce; Edward F. Diekmann, mayor of Evansville; Louis Ruthenburg, chairman of the board of Servel, Inc.; and W. Paul Jones, president of Servel.

to sell both types of refrigerators!

# NEW SERVEL

WITH MANY MARVELOUS ADVANTAGES TO HELP YOU MAKE EVERY PROSPECT A CUSTOMER

- ★ Bigger inside—smaller outside!
- ★ Long-Life styling!
- ★ Eight beautiful models to choose from!
- ★ Servel's famous motorless, silent freezing systems!

Here, to round out your sales potential for 1951, is the entirely new Servel line. It's just what you need to sell those important prospects who come to you interested in gas refrigeration.

Wait till they see the sensational new Royal Series—headliner of Servel's three great series for '51. From the spacious eleven and a half cubic foot size to the big-value eight, the Royal Series includes every possible feature of convenience and appearance.

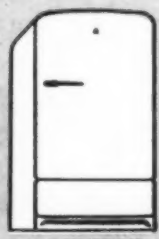
A complete change in engineering design has made

all the new Servels roomier inside, with smaller outside dimensions. And together with the "Hidden Half," Servel's famous motorless, silent freezing system, they offer the finest in modern refrigeration for any family . . . any kitchen. With them you can offer a complete line . . . so no prospect need ever leave your store unsold.

Sell the marvelous, motorless new Servel—and you can't miss cashing in on more business, more profits in 1951!

IT'S THE "HIDDEN HALF" THAT MEANS IT STAYS SILENT—LASTS LONGER

SERVEL  
Economy  
SERIES



MODEL BR-513



MODEL BR-513

STAYS SILENT . . . LASTS LONGER

Servel  
The GAS Refrigerator

Lovely to Look at... So Wonderful to Own



16 cubic foot Ben-Hur. Others 8.5, 12.5, 20 cubic foot

Your BEN-HUR Freezer customers will save money and time by BAKING WEEKS AHEAD! Find out today about the amazing copy-

righted Ben-Hur "Let's Prove It" sales clincher. Helps you make more freezer sales—faster—by showing exact freezer savings for any family.

BEN-HUR MFG. CO., Dept. AC — 634 E. Keefe Ave., Milwaukee 12, Wisconsin

**BEN-HUR** FARM and HOME FREEZERS

HEALTHFUL LIVING THROUGH FROZEN FOODS



## INSIDE DOPE

by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1)  
a double disadvantage as against its entrenched rival with tax-created cheap dollars at its disposal."

The battle for markets, through better products, better coverage, better inventory stocks, and better advertising and promotion, will be a battle between the cheap expense dollars and the expensive expense dollars, and the cheap dollars will win because they can extend farther and take more risks, Ruml declares.

"Why, then, should even big business oppose the excess profits tax? Because," Ruml insists, "all business wants to avoid putting tax considerations before market considerations; because when this happens, competitive enterprise based on efficiency and ingenuity in serving the public demands will have been distorted by artificial and irrelevant factors which have nothing to do with skill in making and distributing the things and services that people want."

"It is not only proper, but it is the duty of management to minimize by all lawful means the tax consequences of business decisions. It is a duty because management is a trustee for all parties at interest in the health and growth of the business—stockholders, workers, vendors, and customers. The individual may, if he so desires, pay more than the law

requires. The injury is to himself alone. But management is not a free person. It is acting for others who depend on the business for products, wages, markets, and income."

Tax-oriented business management, Ruml points out, must face an inevitable shift of emphasis. Prudent use of a double standard of expense dollars requires management to put its planning house in order at once, since the benefit of cheap expense dollars must be gained principally in 1951 and 1952.

Ruml has revealed aspects of managerial practice and discretion affected by the excess profits tax by observing that it is important for management to know as soon as possible and to what extent the excess profits tax will affect the future of an enterprise.

Comptrollers, being constitutionally conservative, are inclined to underestimate investments in advertising and "good will." Formerly, this conservatism was a good practice, but under the excess profits tax, underestimating the tax bite may be extremely expensive, according to Ruml. Underexpenditure of as little as \$100,000 for a self-development program would cost a company \$77,000 in taxes, "and the amount may be even greater if corporation income taxes are increased."

(Note: they will be!)

Consistent advertising, supplemented by intensive cultivation of customers, and greater knowledge of consumer response as against competition, were cited by Ruml as marketing advances made possible by cheap dollars. Sound public relations projects, including community, regional, and national educational activities,

might also be undertaken to produce lasting benefits.

While conceding that it is difficult to foresee measures which will affect capital structure, Ruml advocates making all possible charge-offs for depreciation; paying dividends partially in cash and partially in stock; borrowing; and timing gains and losses with excess profits tax considerations in mind.

The excess profits tax has few friends among those in Congress, or in the executive department, "who are knowledgeable about tax matters," Ruml predicts, however, that when the law expires on July 1, 1953, "many business managers will have found their competitive position substantially improved by reason of the cheap dollars at their disposal."

### Advertising In Mobilization

Expertness in institutional advertising is likely to assume a position of importance equal to, if not superior to, the standard task of product promotion. D. W. Figgis, chairman of the board of directors of the American Can Co. avers.

"This outlook for institutional advertising is daily becoming more clear," he observes, "because America's free competitive system is now arrayed in a world-wide contest with a rival economic system. This system is typified by Communist Russia, where a chronic inability to produce the means of a better life is concealed under a highly vocal ability to merchandise promises of Utopia."

The advertising profession is destined to see "commando service on the fighting front of ideas." It will

be called upon to present the practical merits of the American productive system "to our own people and to foreign populations with the same force and clarity that has enabled the profession's skills to activate billions of dollars worth of product purchasing-power in past years," Mr. Figgis adds.

Looking ahead, the distinguished Board Chairman emphasizes that this country, its form of government, and its economic system are destined to play a central role on the world stage.

"Our success in solving our own problems of public welfare, or industry, or human cooperation, will be important not only to us, but also to millions of men and women of other nations who look to us for inspiration and leadership in building a better world," he concludes.

### Major War Cycles

There is scientific basis for the belief that major war periods recur at intervals of about 22 years, according to a report by the Foundation for the Study of Cycles.

"Major periods of international conflict are, therefore, at least partially predictable," insists Edward R. Dewey, director of the foundation. "If the patterns of the past continue, the next few years are perhaps the least likely years for large scale international conflict."

Emphasizing his belief that we should be constantly on the alert, he warned: "Every year past 1953 or 1954 increases the danger and, by 1960, international conflict should be quite active if tendencies of the past continue."

"Continued peace is not the normal experience of mankind."

"The more important implications of this study, and others now being made on international conflict, are that they may throw some light on some of the more fundamental causes of war and may eventually enable us to minimize them," states Mr. Dewey. "Some day, it may be found that mankind at certain periods is more excitable and commits acts which lead to wars, while at other times people behave more conservatively."

"Who knows? It might be found that this human excitability is due to physical changes in our atmosphere caused by changes in the nature or the quality of solar emanations." The report points out, for example, that the length of the main war cycle is equal to the length of the double sun-spot cycle.

The report tells of other cycles which, when studied, may help indicate the probabilities of war more exactly. Information about cycles probably can't be used to forecast the exact year of war's coming, however.

Cycles represent tendencies.

The report of the foundation, a 40-page document, gives a detailed annual record of war from 599 B.C. forward. This record, in graphic form, was prepared by Prof. Raymond H. Wheeler, and is the most complete index of wars ever published, according to Mr. Dewey.

In addition to the study of war cycles, the current report contains a chart showing the unfolding of the present wholesale price cycle, an article on cycles in the abundance of wild animal life (editor's note: any relation? ! ! !), and an article on the 33-month cycle which dominates the ups and downs of many kinds of business in the United States and Canada.

The article on the 33-month cycles shows regularly recurring fluctuations which have been present in many aspects of business for 40 years or more. These cycles are distorted during war years but reappear when the wars are over. Where they apply they indicate lessening business until the latter part of 1951.

### Freezer Dealer Is a World Champion (Curler)

The Nova Scotia curling team—of which George Hansen, Sweden Freezer dealer, is a mainstay—recently annexed the Dominion Curling Championship . . . which is emblematic of the world's championship.

Curling has been explained—to the uninitiated—as shuffleboard on ice. It is played on an ice-covered area with heavy, tea-kettle-shaped weights which are sent toward the rival goal with a hearty shove by participants.

The players use brooms to advantage in sweeping the ice immediately ahead of the sliding weights . . . this is said to speed the weights and coax precious extra feet from them

toward the end of their skidding, sliding trek along the ice.

After a lavish series of celebrations over the championship event, George Hansen has again resumed active promotion of Sweden Freezers in the Nova Scotia sector.

Hats off!

### MacArthur Footnote

Hal Conrad, York Corp., covered the historic MacArthur-Truman meeting at Wake Island for the armed forces. Back in New York on an emergency leave, he told of inadvertently giving General MacArthur what amounted to the big laugh of the famous parley.

The General asked what his civilian occupation was. Hal replied that he had first been a newspaper reporter and then a public relations man for a refrigeration firm, at which the General roared, "From the ridiculous to the sublime!" A *Life* photographer captured that moment.

Hal was one of the first Naval reservists to be recalled to active duty during the present emergency and, until the Truman junket arrived at Wake, he was the only press man on the island. Besides getting a story from General MacArthur, he also interviewed H.S.T. and received the presidential autograph minus any accompanying letter.

Good journalist Conrad reported that the high ranking thirsts were slaked by long cool drinks, and the ice was furnished by two ancient York DER-10 FlakIce machines supplied the Navy almost 10 years ago. They are the island's sole source of ice, providing up to two tons of frosty ribbon ice daily. At war's end they were left on Wake to die honorably in line of duty. But Pan American World Airlines, the only airline flying in to Wake, discovered them and had them restored to duty, much to travelers' joy and that of the crew which is laying out new runways and airport installations.

### Sports Brief

In his first appearance at Yankee Stadium rookie Lou Limmer of the Philadelphia Athletics was coolness itself.

Loads of friends and relatives were in the stands (New York is his home town) but Lou was unruffled when called upon to pinch-hit in the ninth inning. Vic Raschi threw. Wham! Home run.

Perhaps the reason Lou is so cool is that when not playing baseball he is a refrigeration serviceman.

# "...lifesavers under today's emergency conditions"

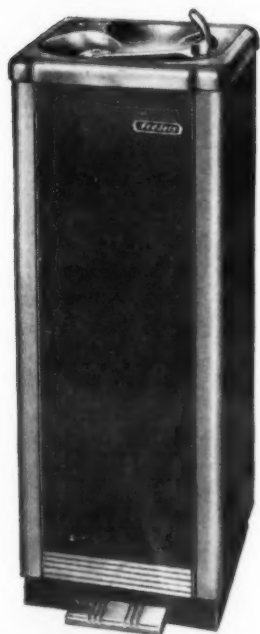
"...and we are finding that Fedders Water Cooler sales are lifesavers thanks to multiple sales to essential business, industrial and institutional customers. They are a splendid opening wedge for immediate cash business to fields which we had been overlooking."

...say Distributors and Dealers



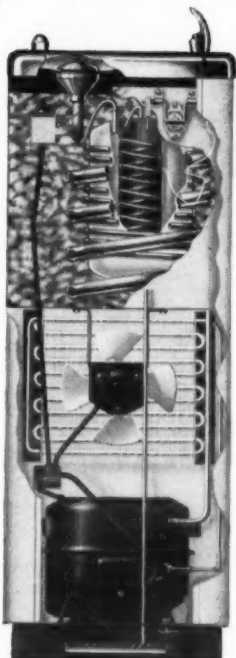
## fedders

### WATER COOLERS



DESIGNED RIGHT OUTSIDE

DESIGNED RIGHT INSIDE



#### CHECK THESE FEDDERS FEATURES AGAINST ALL EXCLUSIVE CLAIMS

- 
- STAINLESS STEEL TOPS
- AUTOMATIC STREAM HEIGHT
- FOOT PEDAL CONTROL
- LESS THAN 14" FLOOR SPACE
- 5 YEAR PROTECTION PLAN
- HERMETICALLY SEALED
- LUBRICATED FOR LIFE
- 20 YEAR WATER COOLER KNOW-HOW
- AIR COOLED, WATER COOLED AND EXPLOSION PROOF MODELS

Write Dept. AC-11 for Information on Fedders new line of Water Coolers

## FEDDERS-QUIGAN CORPORATION

57 TONAWANDA ST. • BUFFALO 7, N. Y.

# CHILL CHEST

The Greatest VALUE in FOOD FREEZERS

THE FAMILY'S PREFERENCE EVERYWHERE



Revco, INC. • DEERFIELD, MICH.



# Water Shortage, Limited Space Are Factors In Upper New York Theater Jobs

## Conservation Measures Required After May 1 By New Law In Albany

ALBANY, N. Y. — Competition from home television sets and drive-in theaters and requirements of a new local water conservation law have combined to spur installation of modern motion picture theater air conditioning equipment in the Albany area, according to Robert Walsh, of Avery M. Walsh & Sons, United States Air Conditioning Corp. representative here.

Walsh reports that four Warner Brothers theaters here have purchased diversified UsAirco equipment.

Designed and set up by Albany Conditioned Air Co., Inc., contractor, the installations range in scope from complete all-year air conditioning to simple addition of an evaporative condenser unit for water conservation, as required by a new city ordinance which became effective on May 1, 1951.

The 1,600-seat Avon Theater, which was erected shortly after the turn of the century and had never been air conditioned, has been equipped with 80 tons of cooling and a modern heating system.

The only space available for installation of air conditioning equipment was a room at the front end of the theater which was occupied by a large blower and cast iron heating elements.

The massive heating equipment was removed and two UsAirco 40-ton Refrigerated Kooler-aire packaged units were installed.

Because of the limited space the evaporative condenser sections of the units were placed on a steel framework directly outside the equipment room and connected by short refrigeration lines to the compressor sections.

Ductwork from the old ventilating system carries return air from a plenum beneath the theater. New ductwork brings fresh air to the units, and a complete system of insulated ducts carries the cool conditioned air through the loft area to six ceiling diffusers.

One large diffuser is located at the theater's center dome, two are above the balcony, and three below the balcony. As an economy measure, the system operates in two 40-ton stages automatically controlled by a two-position thermostat.

Winter heating is provided by steam coils in the RK units, doing the same job that had formerly been



CARL J. GOTTLIEB, of Albany Conditioned Air, inspects UsAirco packaged RK unit in the equipment room above the stage of Albany's Ritz theater. The unit's built-in evaporative condenser section is shown at the right. The equipment is used as a plenum for fresh air and evaporative condenser air with intake at the left.

performed by the bulky equipment occupying the entire room.

In the Ritz Theater, a 20-year-old building with a seating capacity of 1,200, a similar installation was made, utilizing a UsAirco RK-30 and an RK-40, operating as a two-stage system.

The units, including built-in evaporative condensers, were placed in a former heating and ventilating room above the stage. In this case, the room itself is used as a plenum both for fresh air and evaporative condenser air. Exhaust from the condenser is taken outside.

As in the Avon, the equipment is grouped compactly, and utilizes existing ventilating ducts, keeping original cost low.

The 2,300-seat Strand Theater, Albany's leading motion picture showplace, had a manually-controlled 100-ton system, using city water for condensing. Its cooling capacity was insufficient and air distribution to the critical areas above and below the balcony was poor.

The deficiency in capacity has been overcome by the addition of an RK-30 unit distributing cool air to six diffusers under the large balcony. The unit is located in a room behind the balcony, with its evaporative condenser section nearby outside.

The system has been rendered completely automatic, with two com-

plete zones. Under small load conditions the 30-ton unit operates alone and the main system is turned on automatically when required.

A 100-ton UsAirco evaporative condenser has been added to the old system to conserve approximately 95% of the cooling water.

In the Madison Theater, an 80-ton UsAirco evaporative condenser has been installed in conjunction with the

100-TON UsAirco evaporative condenser was added to the existing air conditioning system in the Strand theater to recirculate 95% of the condensing water. A UsAirco RK-30 was installed to provide cooling for the critical areas under the balcony.



existing system. The unit is mounted on a steel I-beam framework outside the theater and adjacent to the equipment room for short refrigeration lines.

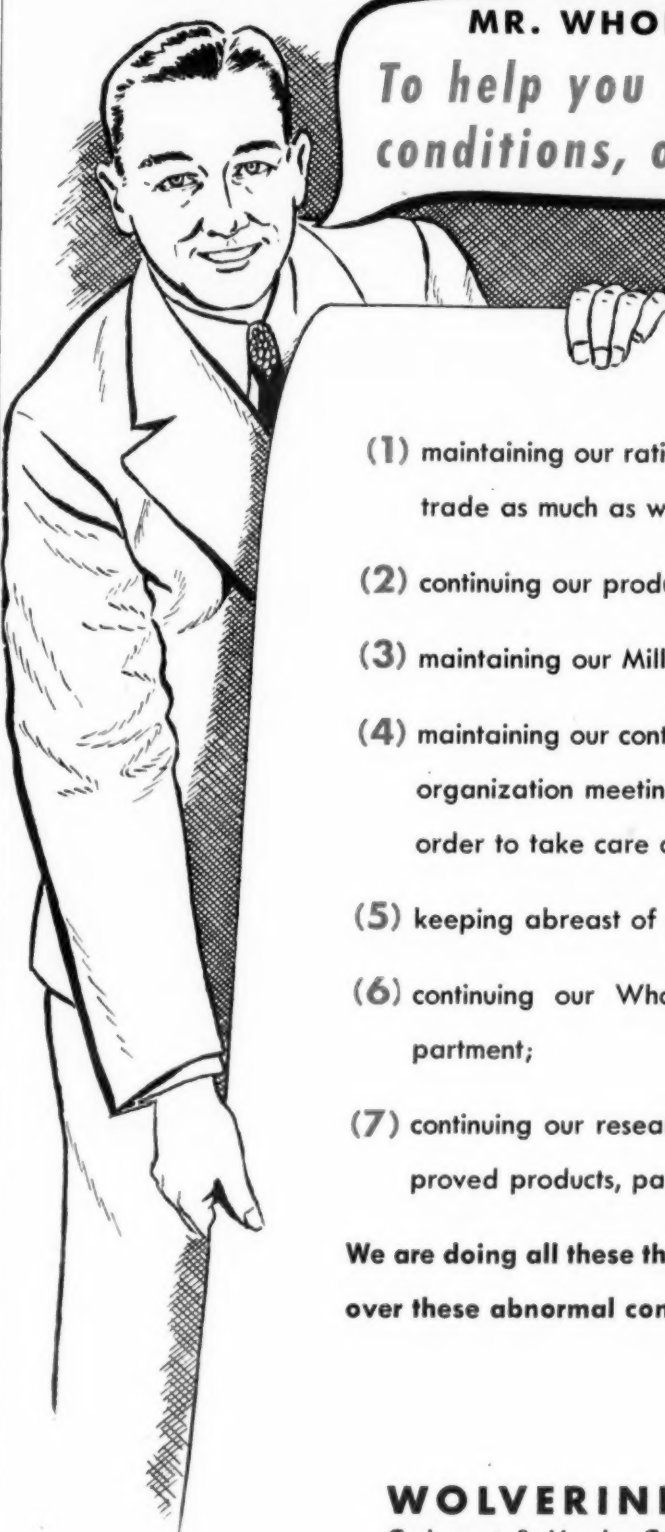
A number of other upstate New York motion picture houses have been recently equipped with the UsAirco packaged units through Avery M. Walsh & Sons.

Warner Brothers' new Winter Garden, in Jamestown, has a two-

stage 60-ton system, also installed by Conditioned Air Co.

In Syracuse, the Kallett chain's new Westvale Theater has an RK-40 and an RK-20, and the Acme, Globe, and Wescot Theaters, operated by Sam Slotnick Enterprises, are cooled by the packaged units.

RK equipment has also been installed in two theaters in Catskill—the Community Theater and the new Catskill Theater.



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- (2) continuing our production of the group sizes of tubing;
- (3) maintaining our Mill Depot distribution arrangements;
- (4) maintaining our contacts with you and attending the various organization meetings held by refrigeration associations in order to take care of your best interests;
- (5) keeping abreast of government regulations;
- (6) continuing our Wholesaler-Commodity Management Department;
- (7) continuing our research and survey on possible new or improved products, packaging, etc.

We are doing all these things, and more too, to help carry you over these abnormal conditions. We appreciate your patience.

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## 6,000 Weathermaster Room Coolers Will Be Installed In Golden Triangle Skyscrapers

SYRACUSE, N. Y.—Three tall buildings now rising in Pittsburgh's Golden Triangle will be completely air conditioned with the largest "Conduit Weathermaster" installation in the world, it was announced by Carrier Corp.

Two of the buildings will be 20 stories high, and the third 24 stories, providing a total rentable area of some 850,000 sq. ft.—enough to increase the entire city's present office space total by about 15%. Completion is scheduled for 1952. Equitable Life Assurance Society of the United States is the owner.

Approximately 6,000 Weathermaster room units will be installed—about 50% more than the total for the United Nations Secretariat building, the largest previous installation. The air conditioning system has been so devised that no mechanical equipment will be needed between basement and penthouse in any of the buildings, thereby making more space available for rental purposes.

"Use of more than 12 miles of small conduit, carrying conditioned air under pressure and at high velocities to all outside rooms, will substantially eliminate bulky ductwork and provide a further saving in ceiling heights and floor areas," Carrier said.

All refrigeration for the air conditioning will be centrally located in the basement. Three giant Carrier centrifugal refrigeration machines, among the largest of their kind ever built, will be installed. They are rated at 1,500 tons each.

Weathermaster outlets will be furred into the walls under the windows, both facilitating any desired

re-arrangement of partitions to suit the desires of tenants and allowing individual control of indoor climate in all outside rooms.

Each of the presently rising buildings will be built in the shape of a cross, with the width of each wing about 50 ft. in outside measurement. The narrowness of the wings will permit this system to supply virtually the entire buildings, with interior zone air conditioning held to a minimum.

The refrigeration system will not require a cooling tower. Water will be drawn from the nearby Allegheny River and pumped back again after being circulated through the refrigeration condensers.

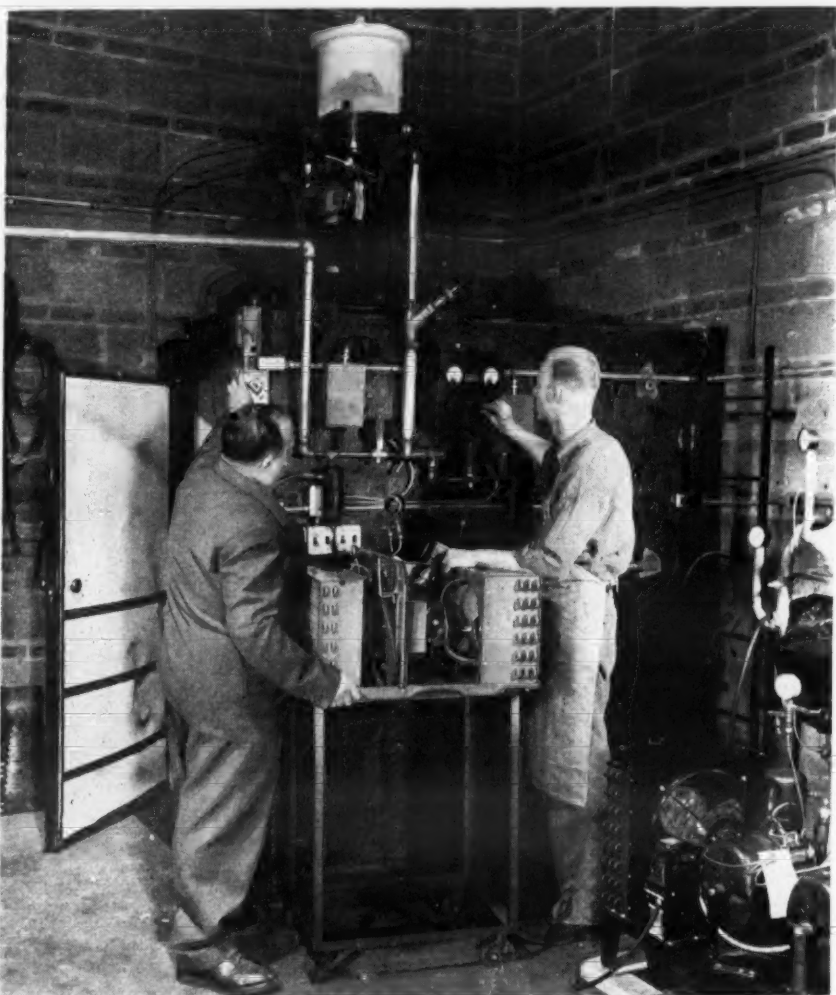
Architects for the project are Irwin Clavan, and Eggers & Higgins. Starrett Bros. & Eken, Inc. are the builders. Meyer, Strong and Jones are serving as consulting engineers for mechanical equipment, and Kerby Saunders, Inc. is the heating and air conditioning contractor.

### Mitchell Names Distributors In Northwestern States

CHICAGO — E. A. Tracey, vice president of the air conditioning division of the Mitchell Mfg. Co., has announced the appointment of several new franchised distributors for the Mitchell line of window-type room air conditioners.

The new distributors are: F. B. Connelly Co., Portland, Ore. and Seattle; Prudential Distributors, Inc., Spokane, Wash.; and Glenn Earl, Inc., Salt Lake City.





DEHYDRATING SYSTEM employed by Refrigeration Parts Co. has a special vacuum pump that pulls down to 50 microns and an electronic detector for moisture and leaks. Here James "Hans" White (left), owner of the firm, and Fred Worthington check a window air conditioner.



DEHYDRATING OVEN is equipped with electric strip heaters and infrared lamps to speed drying of system when connected to vacuum pump.



OWNER of Refrigeration Parts Co. in Brooklyn, White has an extensive background which is of inestimable value in operating the wholesale dealership and rebuilding shop.

## Wholesale Repair Firm Finds Investment In Expensive Test Instruments Worthwhile

### PART 1

BROOKLYN—Equipped with special machinery, expensive test instruments, and other devices, Refrigeration Parts Co. here has a hermetic rebuilding plant that could rival the shops of some manufacturers.

### Refrigeration Parts Co. Specializes on Repairing and Rebuilding Air Conditioners

At least, that's the belief of James "Hans" White, veteran refrigeration engineer who's been in the business for nearly 25 years.

What with a specially designed vacuum pump that pulls down to 50 microns, an electronic gauge that will instantaneously show how much moisture may still remain in the system at that exceedingly low vacuum, and unusual piping and electrical hook-ups, Refrigeration Parts has made a specialty of re-operating sealed units for the trade only.

#### SERVICE ASSISTS CONTRACTORS AND ENGINEERS

The rebuilding and re-operation service is offered as a means of assisting contractors, service engineers, and others who are not equipped to handle unusual work of this kind. The firm is an authorized wholesale dealer for Servel condensing units and parts in the metropolitan New York area, beside wholesaling parts for Mitchell and York window air conditioners.

Another specialty of the firm is the rebuilding of window air conditioners, including the hermetic system.

"We can re-operate a window air conditioner under warranty in 24 hours," White says.

Shop operations are under the direction of Fred Worthington. Facilities include complete testing apparatus to help to determine the source of trouble in an inoperative power unit.

"We can tell in 15 minutes exactly what's wrong with a unit, where it used to take 1½ hours as a rule," White declared. "Our aim is to positively diagnose the problem without opening the system. This saves time for the service engineer and often eliminates work and expense that might otherwise be involved."

"For example, we have instruments for checking the flow of refrigerant through a system by sound only," White says. "This permits us to quickly determine if there is any restriction in the lines, and if so, exactly where. Another instrument lets us determine the r.p.m. actually being turned up by a sealed unit. This is an electronic device that merely involves making a contact with the metal housing of the sealed unit."

Perhaps this desire White has for the complete instrumentation of his shops stems from his early training.

He started with General Motors in Germany spending four years in training on automotive and air compressor work. The first two were in the shop where he spent three months in each of the many departments. Then he was transferred to the offices and here also he was made familiar with all departments.

In 1923 he came to the United States to work for Frigidaire, which shortly sent him back to Germany. He's been back in the U. S., however, since 1929, working for Frigidaire until 1943 when he set up his own business. Refrigeration Parts Co. was organized in November of 1947.

The firm is located in Brooklyn at the end of the elevated Third Ave. expressway which connects with the recently opened vehicular tunnel between Manhattan and Brooklyn. Combined with the west side expressway on Manhattan, Refrigeration Parts is only a few minutes drive from the midtown area, according to White.

#### OPERATION REQUIRES TWO BUILDINGS

Two buildings on Third Ave. and 64th St. are occupied by the firm. One is a completely air conditioned two-story building providing a large display and parts supply space in addition to the upstairs offices and meeting room which seats 75 to 100 persons.

"Here we conduct sales and service schools on Servel hermetic units and we make it available also to commercial fixture and air conditioner manufacturers for their dealer service schools," White says.

Special wiring arrangement permits actual demonstration, for example, of how low voltage effects the operation of a refrigeration unit.

"This is important because condensing units are often condemned when the cause of the trouble is actually low line voltage," he explains.

The shop is housed in a separate building just across the street from the office and warehouse. Customers find plenty of off-street parking space here, even those with large semi-trailers.

General procedure in re-operating a piece of equipment, such as a window air conditioner, first calls for checking the warranty records to determine whether the manufacturer, dealer, or service firm is to be charged for the work. This is done in the office, and then a work order

(Continued on next page)

# 11 Reasons Why BAKERAIRE'S THE "BUY"!

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**Air conditioning** doesn't have to be expensive any longer. The new Bakeraire has been engineered to deliver more cooling per horsepower at lower cost, achieved by Baker design developments. It's more efficient ... operating time is reduced. It costs less to install ... with simplified connections. It costs less to operate ... with a new water-saving condenser.

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1. **Exclusive "Sphericoil"** over-capacity condenser exchanges heat faster with less water consumption.

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5. **Permanent air filters**, crimped wire mesh, easily removed for quick cleaning with steam or hot water.

6. **Fibreglas insulation**, sound absorbent, waterproof, rotproof, does not hold odors, prevents sweating.

7. **Famous Baker Freon compressor**, Timken bearing open-type or hermetic as desired in all capacities.

8. **Reversible plenum**, adjustable for front or rear 4-way air discharge, up and down, left and right.

9. **Easy connecting**, with new 45° plumbing "tree" cuts connecting time 50% to city water or water tower.

10. **Overload protection**, motor starter with automatic overload protection, high-low pressure control.

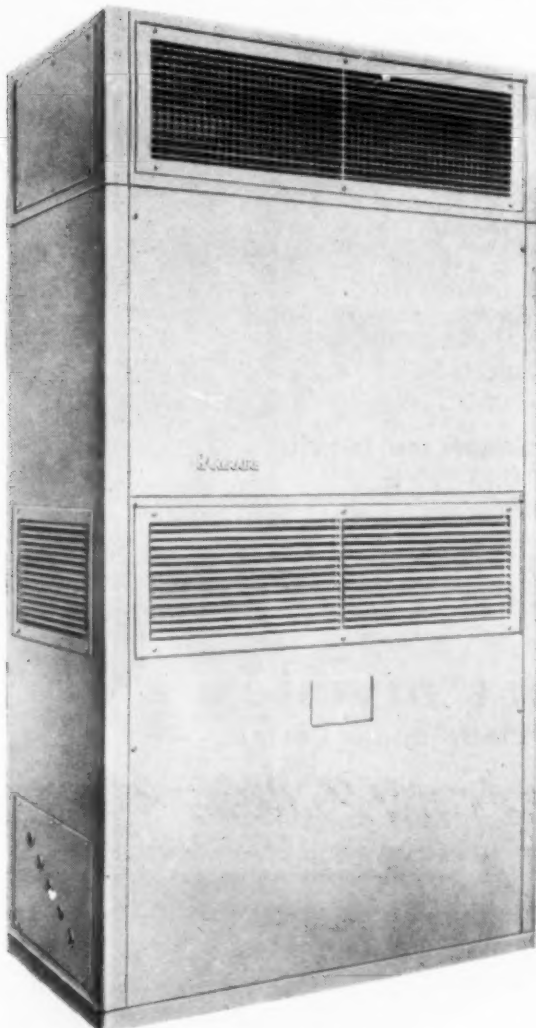
11. **Coil spring mounting "cradles"** compressor unit to absorb vibration and assure quiet operation.

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## Brooklyn Firm Also Serves N. Y. Area as Distributor of Units

(Continued from preceding page)  
card is made out and sent to the shop.

First step is to test the unit to determine the cause of the trouble. This may involve the use of an Air-serco electronic sound tracer, which, according to White, quickly locates restrictions that may be in the lines.

It may be necessary to check the electrical system for continuity. For this the test set-up which has been devised sounds off a loud buzzer if a break in continuity develops. The latter is also used in checking the individual electrical components, and if a break in continuity of a coil, say, is indicated by the buzzer, the next step may be to throw a high tension wire into that circuit. Powered by a magneto coil, this test will show a spark at the exact point of the break.

A similar test using 1,500 volts permits a quick determination of whether the unit is grounded anywhere.

### 'HOT ROOM' USED IF FURTHER CHECKING IS NEEDED

In rare cases it may be necessary to check the over-all efficiency of the unit. This operation is performed in a fully equipped "hot room" with recording thermometer, etc. It is seldom needed for this purpose, however, since preliminary tests such as checking the r.p.m. of the sealed unit and the others outlined above will lead directly to the difficulty.

Assuming that it is found that something is wrong with refrigeration side of the air conditioner, it is then discharged. The oil from such a unit is poured directly into a drain which feeds into a 550-gal. tank buried beneath the floor. Oil is automatically diluted with water in this tank and safely discharged into the sewer, White explains.

"After the system is discharged, each component part of the system—the compressor, condenser, evaporator, capillary tube, etc., is tested individually with a flow meter which will detect immediately any possible restriction in the individual parts of the system. Through experience we know just what the flow meter readings should be.

"If a restriction is indicated, the offending component is either repaired or replaced. If the unit or

power head, for example is defective, it is replaced with a new or rebuilt unit," White says.

### BRAZING DONE WHILE NITROGEN FLOWS THROUGH LINES

Next step is to reassemble the unit. Lines are brazed together again while nitrogen is flowing through the system. This is to prevent oxidation of the lines.

It is then necessary to dehydrate the system before it is recharged. The system is hooked up to a Kenny vacuum pump which will pull down to 50 microns. To obtain the utmost efficiency out of this precision pump, a special tank was designed which pulls the oil out of the pump continuously.

The oil is put through three strainers and then into the tank where electrical heater elements maintain a temperature of 227° F. This heat boils the moisture out of the oil, after which the oil is passed through a chilled water heat exchanger to cool it and bring it back to the desired viscosity level. Thence it is returned to the Kenny pump. The moisture driven off in the oil heater goes out through an open pipe.

Advantage of this special oil-cleaning and dehydrating hookup is that it adds greatly to the life of the oil. If the moisture absorbed by the oil were not continuously removed, the oil would have to be replaced within a few days or perhaps hours, depending on how much moisture it picked up.

The pump itself is mounted on top of a dehydrating oven fitted with electric strip heaters and infrared lamps. It is thermostatically controlled to maintain 227° F. Ordinarily it's not considered necessary to use the oven in dehydrating a unit or complete system, but it does help if it's advisable to speed up the dehydrating operation.

Despite the high efficiency of the vacuum pump arrangement, Refrigeration Parts does not assume that merely because a high vacuum has been pulled on the unit for a certain period of a time at a certain temperature, the system must be dry.

Instead, an expensive Pirani gauge has been provided to test not only for leaks but for the amount of moisture left in the system. Ex-

tremely accurate, this gauge is an electronic instrument made by a subsidiary of Eastman Kodak Co. It is designed to show the amount of moisture still in the system down to as low as 50 microns.

Generally after the dehydrating operation has continued for the prescribed length of time, the vacuum pump is shut off for about 10 minutes. The Pirani gauge immediately shows the presence of moisture or leaks in the system.

(To Be Continued)

## George A. Hayner, Research Engineer, Dies

DAYTON — George A. Hayner, nationally known for his work in frozen food research and in the application of commercial refrigeration, died April 24 after an extended illness.

The 50-year-old Hayner had been in poor health since 1949, when it forced him to retire as manager of the product development and application division of the Frigidaire commercial sales department.

He had joined Frigidaire here in 1926 as a sales engineer. Prior to that he was employed at Delco Products.

Hayner was an associate editor of the 1950 edition of the American Society of Refrigerating Engineers Data Book.

He was graduated from Cornell university in 1922 with a mechanical engineering degree.

## Process Developed To Produce Ductile Wire, Ribbon from Bismuth

MUSKEGON, Mich.—Though brittle and with low tensile strength, bismuth has been successfully made into a ductile wire and ribbon by the Fitzpatrick Electric Supply Co. here.

The company claims to have overcome these traditional difficulties with bismuth to a large extent and to have produced bismuth ductile enough to wind on its own diameter at about 70° F.

Handled with care and not subjected to strain exceeding its tensile strength, bismuth can be used to wind coils, make non-inductive prods, and make transformers without failure, the firm said.

The possibilities of development in the control and instrument fields by the use of ductile bismuth are tremendous, due to the unique electrical properties of the material, the company asserts.

"Bismuth has no near competitors and offers the following characteristics greatly in excess of all other materials," the company said.

"1. Resistance change in a magnetic field. This opens up an automatic voltage control, controlled output in watts, etc., overcoming errors due to voltage drop, instrumentation, calculators, fogging of X-ray pictures due to voltage variations, etc. Any quantity of current can be controlled through tubes.

"2. Voltage change due to Hall effect. Locating ferrous metals, submarines, for alarm systems, signals, and many other applications.

"3. A variable rectifier; in fact,

the only variable rectifier known. What its uses will be is unknown, but it will be used in the near future.

"4. Hot and cold junction for instrumentation or refrigeration.

"5. Most negative material known for thermocouples; exceeds all others by over 100%, giving -69 microvolts per degree Centigrade change against platinum from 0 to 100° C.

"6. Best material for resistance (ohms) change due to temperature change for instrument control. 720 ohms/mil ft. Makes possible the use of a small amount of wire for giving an appreciable change in resistance per degree.

"7. 95 Bi 5 Sn also ductile. Most positive alloy known for thermocouples, giving +57 microvolts per degree Centigrade change against platinum 0 to 100° C.

"8. 95 Bi, 5 Sn is better than pure Bi for resistance ohm change having a resistance of 2,150 ohms/mil ft."

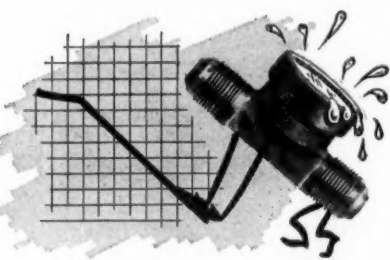
The company offers, without charge, a 20-page booklet entitled, "Ductile Bismuth Wire—The Magic Metal of the Age." Also available is a price list for those interested in purchasing small batches of wire for development work.

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Turn to "What's New" Page for useful information on new products.

## REMCO EXPLAINS THE TRUTH about losses from

### LEAKING LIQUID INDICATORS



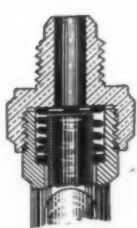
Even though they may be constructed of the highest quality materials, conventionally designed liquid indicators depend upon the resiliency (springiness) of the gasket material to form the initial seal and also to maintain the seal.

Unfortunately, rubber-like gasket materials tend to lose their resiliency with age, and as they lose their resiliency, they "cold-flow" or "take a set"—then a leak results.

But not so with E-Z-SEE. In the exclusive E-Z-SEE design, (see illustration) each gasket is backed up by a spring. As the E-Z-SEE gaskets lose some of their resiliency, a leak cannot result because the coil springs compensate by continuing to apply just the right amount of force upon the gaskets, to permanently maintain the seal.



## Get REMCO's E-Z-SEE TO INSURE GREATER PROFITS



Note how in E-Z-SEE, unlike in conventional liquid indicators, spring-compensated leak-proof gaskets and 'floating' high-pressure Pyrex glass assure you the following advantages: 1) Perfectly safe . . . glass is protected from damage by unique slotting arrangement—safe at pressures up to 500 PSI. 2) Positively leak-proof . . . can't leak because springs automatically maintain just the right force to form a positive seal around the glass. 3) E-Z-SEE through . . . both sides of the body are open to let in light through the tubular high-pressure gauge glass. No more losses from leaking—here truly is the 100% answer to the industry's demand for a fool-proof liquid indicator.

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Dryseal is easy as pie to handle. Being dead-soft it

is easily bent with the hands. It is this same soft temper, and the ductility of the copper used, that makes Dryseal easy to flare for compression fittings without any danger of splitting. Economical tube sizes range from 1/8" to 3/4" O.D.

And, for your greater convenience we have just recently brought out Dryseal in a nifty-50 one-coil carton. This carton, which has been attractively designed for easy identification in stock, contains one 50-foot coil of Dryseal . . . is easier to handle, light weight, economical.

NOW in the NIFTY-50 one-coil carton!



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## Unroasted Nuts Stay Fresher Longer In Refrigerated Case

DENVER—Installation of a refrigerated, self-service display case has opened up a new sales field for Morrow's modernistic specialty nut meat store in the center of Denver's downtown shopping district.

While the store, operated by Donald Higer, enjoys an excellent volume of sales on roasted, buttered, and salted nuts, it had had little success in the field of raw nuts for home baking—until Higer hit upon the idea of maintaining a large, refrigerated display to appeal to passing housewives.

"In order to provide maximum flavor, nuts used in home baking must go into the ingredients raw," Higer explained. "In fruit cake, plum pudding, cookies, and the like, the nut is actually roasted during the baking process and spreads its flavor evenly through the dough. The use of raw nuts for this purpose has increased sharply in recent years."

But Higer found sales slow due to the inability to keep unroasted nuts at top condition in the store.

"Although the general public impression is that nuts are not perishable, the unroasted variety is extremely so," the retailer said. "Even though there is no apparent change in the texture or appearance of unroasted nuts, they soon lose their flavor through drying up when exposed to room temperatures, and a definite rancidity or mustiness of flavor sets in."

"Thus, even though unroasted nuts are tightly packaged in acetate to



REFRIGERATED, SELF-SERVICE display case has boosted sales for Morrow's nut meat store in Denver. Raw nuts used for baking, when packaged in ploidfilm and held at 38° F., retained their flavor and freshness considerably longer than those kept at room temperature.

protect them from the air, their high degree of perishability made them a risk on the shelves."

After making several tests, Higer discovered that walnuts, pecans, filberts, chestnuts, almonds, cashews, and peanuts, when packaged tightly and sealed in ploidfilm, would retain their flavor ideally under a temperature of 38 to 40° F.

The tests proved that the life of unroasted nuts was extended considerably through proper refrigeration. The findings led to installation of a 6-ft. Sherer self-service refrigeration unit in the store.

Twenty varieties of unroasted nuts are now on display in the 3-tier case, located against the rear wall of the

store, directly opposite the entrance. All of the nuts are tightly packaged in ploidfilm, as soon as received, and are displayed in one, two, and four-cup bags.

A 6-ft.-long sign over the all-white refrigerator states, "Housewives, unroasted nuts cost you less! . . . Our new service gives you unroasted nuts . . . Sealed airtight to hold nutty flavor . . . Nuts kept really fresh under proper refrigeration."

Results have been excellent, according to Higer, with a sharp increase in sales every week since the refrigerated case was displayed.

Similar refrigerated display cases will be installed in other Morrow stores, he indicated.

## New Westinghouse Electroplating Process Gives Bright Metal Finish, Uses No Nickel

PITTSBURGH—A revolutionary method of metal plating developed by Westinghouse Electric Corp. engineers may hold the answer to the problem of conserving huge quantities of critical nickel and still provide the nation's appliances and other products with bright, corrosion-resistant trim, it was revealed here last week.

George W. Jernstedt, manager of electroplating projects for Westinghouse said the technique—called periodic reverse plating—can be applied easily to auto bumpers, door handles, radiator grilles, body trim, toasters, irons, and tubular furniture.

"Where no nickel at all is permitted, such as on appliances and auto trim," he disclosed, "the new process provides a chrome-on-copper finish that is as bright as the standard finish and has satisfactory corrosion resistance."

"In other cases where some nickel is permitted—auto bumpers, for example—PR plating makes it possible to substitute copper for a major part of the nickel normally used, thus achieving a big savings of this critical material."

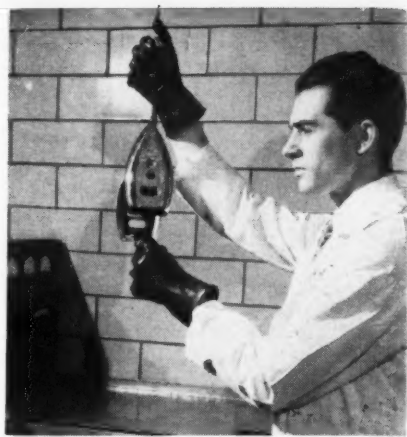
Jernstedt said that Westinghouse has been using the process for more than a year in electroplating its appliances. Now several automobile manufacturers and suppliers are adopting it for use on many types of auto parts and accessories. The technique was first perfected in the Westinghouse laboratories in 1948.

Using the Westinghouse system, the engineer explained, a layer of copper—about one-thousandth of an inch thick—is plated onto the steel base.

"If nickel is allowed, we then add a layer about one half the thickness of the copper layer," Jernstedt said. "The coating is completed with a film of chrome that may be less than 1/100,000th of an inch thick. Before nickel was put on the critical list, the conventional method was to plate the steel first with nickel and then chrome."

Although not as scarce as nickel, copper is also a critical material, the Westinghouse engineer pointed out. But he added that the new plating system requires only small quantities—much less than for other metal substitutes proposed. In addition, many hundreds of thousands of gallons of copper-plating solution already are available for use.

The key feature of the new plating system, Jernstedt explained, is an "electrical backstroke" that alter-



FINISH ON this electric iron cover demonstrates metal plating technique developed by Westinghouse. Called periodic reverse plating, the new technique employs an "electrical backstroke" in which metal is alternately deposited and taken away until a smooth layer of the required thickness is built up.

nately deposits metal then takes some of it away, until a smooth, bright surface is achieved. Other processes send a continuous flow of direct current through the plating tanks until the required thickness is built up.

"In the copper plating process," he explained, "the piece to be plated is placed in a bath containing copper in a cyanide solution. When electric current is passed through this bath, copper is deposited on the metal piece—which forms the negative terminal of the system—and dissolved into the bath from a copper electrode which is the positive terminal."

"Then, after less than a minute, the current is reversed. As a result, some of the copper already plated on the metal part is dissolved. We repeat this many times until a satisfactory finish is achieved. Each time the current is reversed, inferior metal deposits are removed from the surface and succeeding layers are always plated on sound metal to produce a finish that has superior brightness, strength, and freedom from flaws."

Direct-current methods of electroplating, Jernstedt said, tend to produce surfaces that under a microscope appear lumpy, nicked, and with imperfectly rounded corners. But the new process is said to fill in the "valleys" and smooth out the "peaks" of the surface by alternately giving and taking away metal.

## Viking Refrigerators Announces Changes In Executive Personnel

KANSAS CITY, Mo.—When E. L. Stultz retired as president of Viking Refrigerators, Inc. recently, promotions of a number of top executives of the company were made, the company has announced. All promotions became effective on April 2.

Stultz was elected chairman of the board. He was succeeded as president by Arthur S. Bird, who has been a major stockholder in the company since 1936.

Carl E. Corbin, formerly vice president and sales manager, has been named executive vice president and general manager.

Welch Jensen was elected vice president in charge of production, and Lee Beets was elected secretary and credit manager.

W. C. Smith was promoted to sales manager of the distributor sales division, while H. B. Vogt continues as sales manager of the national accounts division.

Alex Thomas, Jr. was appointed treasurer, George Hansen assistant treasurer in charge of purchases, and Walter Bullard assistant treasurer in charge of traffic.

All officials are local residents except Bird and Thomas, who live in Dallas.

Stultz started with Viking in 1906, two years after the company was founded. He became secretary-gen-

eral manager in 1923. In 1936, he and Bird, became associated as major stockholders. Corbin joined them as a major stockholder in 1938.

Bird is widely known in the development and operation of chain stores and supermarkets.

Corbin first joined Viking as a timekeeper in 1922 and has worked in every department. He has held office as cashier, credit manager, assistant secretary-treasurer, secretary, vice president, and vice president in charge of sales.

Since Bird and Stultz first took over the firm in 1936, its business has increased six times. Through its own operations, Viking has nationwide coverage in the sale of commercial refrigerators. Through Nash Callander Corp. it has worldwide coverage.

Viking has recently enlarged its plant at 7500 Wilson Ave. here and plans further expansion.

## Kuenzli To Assist Director Of Engineering at Crosley

CINCINNATI—Walter A. Kuenzli has joined Crosley division, Avco Mfg. Corp., as assistant to the director of appliance engineering.

Announcement of his appointment was made by the director of appliance engineering, O. E. Norberg.

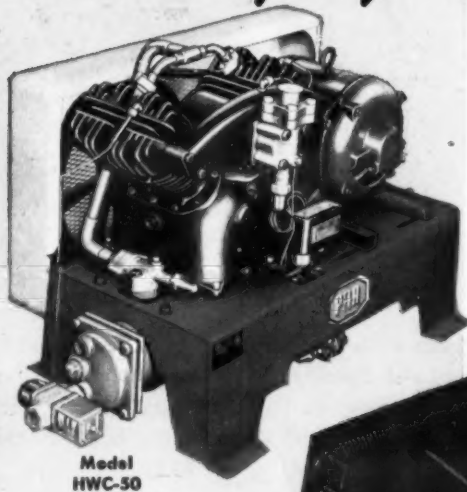
During his 20 years' experience in appliance engineering, Kuenzli has been associated chiefly with Kelvinator and Servel.

Norberg also announced that A. E. Nave has been promoted to the position of chief cabinet engineer.

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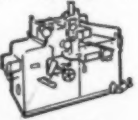
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# Scrap Recovery Program

Beer Dispensing Equipment Producer Revises  
'Exchange Material' Plan To Adapt It  
To Other Industries

CLEVELAND—W. R. Kromer of Superflow Mfg. Co. here revealed that his scrap recovery program originally drafted for use in the beer dispensing equipment field has been re-written, at the suggestion of the National Production Authority, to embrace many other fields.

Kromer said the new plan was prepared and submitted to the NPA's Conservation Division after the latter indicated it wished to extend the proposed program to other industries. The program is designed to "create the incentive required to procure, and control the traffic of critical scrap materials" necessary to rearmament and to the nation's economy, according to Kromer.

Its primary objective is to return to use critical scrap, idle obsolete equipment, and replaceable material. This can be accomplished, Kromer maintains, "if the dealer in placing his product is required to demand used material in exchange for each new item sold to others than those classified and qualifying for a defense order."

## OUTLINE OF ORGANIZATION FOR PLAN

The "National Material Exchange Plan" calls for the establishment of a national office, regional offices, and authorized scrap depots. It would involve the use of a credit-point system, "Exchange Material" certificates, and receipts, and the participation of local banks.

In explaining how the plan would be organized, operated, and administered, Kromer described the proposed method of control as follows:

Credit points would be established for new and used critical materials in proportion to their scarcity and need in the defense program and in industry.

Authorized scrap dealers would be established to receive the materials. These dealers would issue receipts for the materials by weight and issue the number of credits the dealer is entitled to according to the established regulations furnished each authorized scrap depot.

## TREASURY DEPARTMENT WOULD PRINT CERTIFICATES

The Treasury Department would print "Exchange Material" certificates in various denominations similar to present currency and supply them to the local banks. The local bank would accept official receipts in exchange for "EM" certificates as called for on the receipt. A local office would clear these receipts from the bank and reimburse it with new certificates.

The dealer would attach the required EM certificate to his purchase order as per schedule, supplied in purchasing new material or equipment. The manufacturer in turn would attach his EM certificate to his purchase order for raw materials required from the mills and suppliers.

The end supplier or mill would balance his sale of materials with his certificates, forward a copy of his records and his accumulated certificates to a national EM office. Scrap materials would be routed to him from depot inventories in proportion to EM certificates turned in.

## COLORS WOULD INDICATE DENOMINATIONS

"The use of various colors in receipts, denominations in certificates and account cards for authorized scrap depots with modern accounting equipment can make the administration and control quite simple," Kromer asserts. "The Regional Exchange Material office functions only as a clearing house for receipts and certificates. The regional office forwards its receipts to the national office, thereby replenishing its EM certificates."

By enlisting the aid of trade associations, association secretaries, power companies, and the like, the plan "could be placed in operation in a short period of time at a minimum of expense to the government," Kromer states. "The local banks and the associations are definitely interested in helping solve the problems of clients and dealers so their incomes will be protected."

While the primary objective of the

plan is to return critical materials to use, Kromer believes it would also be beneficial in these other ways:

1. Permit uninterrupted business of small manufacturers, distributors, and dealers.

2. Minimize the use of inferior substitutes, thereby maintaining standards.

3. Provide a definite procedure so the segments of industry could plan ahead with confidence, thus minimizing the current apprehension of small concerns over the future of their businesses.

4. Guarantee employment and profits from and for home industries "now endangered because most are scrambling for war work not recognizing that economically everyone cannot obtain war contracts and provide our country with the required revenue from taxes."

Kromer said his plan is "prepared on the assumption that a return of salvage critical materials against that used in new products, to supplement the supply of raw materials, would provide the surplus required for defense requirements without restrictions affecting the production, earning power, and taxable income of small manufacturers and employees."

## WOULD INCREASE DEALER SECURITY

"Supplemented by DO's, the dealer would be secure in knowing that he could remain in business as long as he returned a comparable amount of the critical material used in the product he sells."

"This is an opportune time for such a plan to be used as the inventories in most cases are above normal. The return of critical scrap materials could therefore start flowing to the mills before the inventories are completely exhausted."

It is Kromer's contention that the basic exchange material plan, independent of DO's or priorities, can, with proper organization and administration:

1. Bring in thousands of tons of critical materials such as rubber, tin, aluminum, steel copper, brass, lead, and zinc.

2. Control the traffic and price of scrap and assure distribution through the proper channels, by-passing the unethical dealer who would hoard or sell on the black market.

## MANY SCRAP SOURCES CITED

"In the plumbing and heating industry," he points out, "old boilers, radiators, pipes, and fittings are dumped in scrap heaps awaiting pick up or left to rust. Worn out farm machinery clutters up the barnyards and unused corners of the fields."

"Tons of scrap tin, copper, brass, and other materials are in basements of taverns, restaurants, cafes, and commercial establishments, and many more tons are in use in obsolete equipment that can be replaced by superior modern equipment that uses as much as one third of the critical materials."

"Thousands of old tires line the highways. Junk and wrecked automobiles are left where they fail the owner. The automotive parts industry is preparing to substitute cast iron pistons for the more efficient aluminum alloy, while scrap heaps in each garage are steadily growing, or hauled to the dump."

"Unethical scrap dealers withhold scrap from the market awaiting higher prices. A required inventory and a legal, established maximum percentage of profit would release this material. Controlled operations of the scrap dealer would be required before he would be listed as an authorized scrap depot."

## UsAirco Awarded 2 Air Force Contracts

MINNEAPOLIS—Receipt of two substantial Air Force contracts for production of aerial delivery containers has been announced by the United States Air Conditioning Corp. here.

According to David E. Feinberg, defense contract coordinator of the manufacturing firm, production on the government orders will start immediately.

# Soldered Joint Requirements of B9 Code Considered Inadequate by Detroit

DETROIT—That Detroit's Bureau of Safety Engineering is not in agreement with the requirements on soldered joints in the new ASA-B9 Safety Code for Mechanical Refrigeration was publicly revealed at the first hearings on the city's new code.

As explained in last week's issue of AIR CONDITIONING & REFRIGERATION NEWS, the Safety Engineering bureau has proposed adopting the B9 code by reference, but is amending the section covering soldered joints.

Approved at the first meeting of the "study committee" named to advise the bureau was the following requirement:

"Soldered joints on copper tubing used in all refrigerating systems in buildings for institutional and public assembly uses and in refrigerating systems containing more than 20 lbs. of refrigerant gas in buildings of other use groups shall be fabricated with solders or alloys having melting points of not less than 1,000° F., except that approved self-contained equipment having a refrigerant charge of 6 lbs. or less of Group 1 refrigerants be permitted to have 95-5 solder joints."

Originally the Bureau of Safety Engineering had worded the section so that 1,000° F. solder would be required for institutional and public assembly buildings and on systems in all other occupancies containing more than 20 lbs. of refrigerant.

John C. Rehard, chief safety engineer of Detroit, told the study committee that he considered the B9

provisions on this point "asinine" and drawn up strictly for economic reasons.

This is how the present B9 code reads on this point:

"Soldered joints on copper tubing used in refrigerating systems containing Group 2 or Group 3 refrigerants shall be made with solders or alloys having melting points not less than 1,000° F."

Rehard declared that he could see no reason for admitting that the hard solder joint was superior and then allowing exceptions here and there favoring one refrigerant.

Fire department records, he added, show no case where 1,000° F. solder joints gave way before the refrigerant was drawn off through the relief valve. On the other hand, he asserted, there are dozens of cases where low-temperature solder joints have given way and prevented firemen and engineers from getting at the unit.

Paul Lawrenz, representing the Refrigeration Industry Safety Advisory Committee, argued, however, that in installations of 10 lbs. or less of a Group 1 refrigerant, the release of such amounts would not be toxic and that the refrigerant when sprayed with water from the firemen's hose would condense and be rendered harmless.

He also pointed out that Underwriters Laboratories requires soft solder joints on high-pressure systems to act as a fusible plug. Why penalize such manufacturers, he

asked, when no safety factor was involved.

He then proposed the amendment to the section which was adopted by the committee.

Rehard had also pointed out that almost without exception, local contractors had adopted the use of 1,000° F. solder. He was backed up in this by Charles Purdie, Detroit contractor, and also by Jack Barager, representing the local RSES chapter.

Barager stated that the only men not using the hard solder were those who had not learned how to use it yet.

Lawrenz said that some manufacturers are using soft solder because they cannot get sufficiently trained men to handle the high heat involved. Too much heat, he noted, can damage the copper tubing to the point where safety is endangered even though the joint is strong.

## University Sets Up Lab For Refrigeration Study

AUSTIN, Tex.—Establishment of a new laboratory for research and student training in heating, ventilation, and refrigeration at the University of Texas was announced recently by Dean W. R. Woolrich of the College of Engineering.

The laboratory facilities include an ice-producing machine which can make 10 tons per day, a portable cold room, a flake-ice machine, an air conditioning unit combining ice and evaporative cooling, two portable quick freezers for fruits and vegetables, and a fluid-concentrating freezer.

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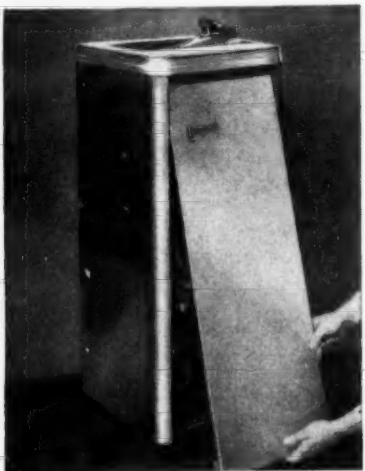
## They'll Do It Every Time . . . . By Jimmy Hatlo



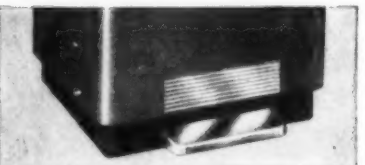
## Do You Have 'Both Feet On The Ground'?



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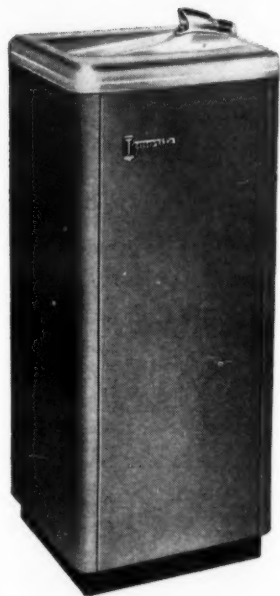


FOOT PEDAL flow control is optional, yet, when applied to the cooler, the finger-tip control is retained, operating independently of the foot pedal. Either may be used as desired.

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"I have always felt that whatever the Divine Providence permitted to occur I was not too proud to report. The people are not served by pussyfooting, or by that sort of journalism in which nobody will ask who is the editor of a paper or the writer of an article, and nobody will care."—Charles A. Dana.

## Dilemma with Horns

THE OUTCOME of an issue now being threshed out in Washington may well determine whether production of consumer durable goods in 1952 will be only a little under the 1950 levels—or a lot.

The issue is this: How much plant expansion can be permitted under the mobilization program without serious damage being done to the nation's economy by inflation?

There was little concern over this question in 1950. Then, the need for expansion for mobilization was clear and acute.

During World War II, the government built the plants that were needed. This time Congress wanted business itself to build them. So last fall it wrote "fast amortization" into the tax law. This allows a company to write off part of the cost of new facilities in five years, instead of the usual 20 or more.

Administrators were given great latitude in deciding what plants would get how much rapid amortization. Certificates of necessity—which permit quick write-off—were granted fairly liberally to basic industries. Idea was to get expansion rolling with a minimum of red tape.

But now, with mobilization goals in sight, the trend is in the opposite direction. Hounded by Congressmen for passing out certificates of necessity too freely, defense officials are beginning to restrict the expansion policy.

Actually, top mobilization officials are keenly aware of the problem. In fact, Mobilizer Wilson and his advisors feel that what is done about proposed expansion above that needed for the basic minimum mobilization program will determine whether inflation will be moderate or dangerous.

This basic program encompasses actual production of munitions; building, expanding, or equipping factories to turn out munitions; expansion of basic raw material capacity; and essential supporting programs such as railway freight cars. However, businessmen want to spend around \$21.5 billion in 1951 for plant expansion. This would be an increase of 45% compared with 1950. And they want to push maintenance and repair work so that facilities will be in top condition.

The civilian boom makes this proposed "extra" plant expansion justified from a business standpoint, businessmen say. And in view of the excess profits tax and the five-year amortization arrangement, this is a good time for both expansion and maintenance and repair activities.

Furthermore, a sizeable portion of this proposed expansion can be justified under the mobilization program—either directly or indirectly. That's what causes the "big headache" for defense officials: where to draw the line?

Supporters of nearly every expansion program can cite arguments for approval of their cause. But here's how defense administrators look at the situation:

Reduction in production of consumer durable goods in 1952 could be held to around 15% if extra plant expansion and maintenance were restricted to about 10% less than the average of the last three years. The civilian products thus available would absorb a considerable amount of consumer money that would otherwise create inflationary pressure on the prices of food, clothing, and rent.

But consumer hard goods output would have to be slashed perhaps as much as 50% if even the reasonably justified part of the proposed expansion and maintenance is approved. Such a program would result in the consumption of approximately 10 million additional tons of steel. That's the big problem on the mobilization front as of this moment.



# Orange Juice Dispensers

**Refrigerated Dispensers Boost Fountain Sales 18%; Eye-Appeal, Per Hour Sales During Rush Periods, Ease of Handling Account for Rise**

WASHINGTON, D. C.—Attractive, sanitary mechanically refrigerated dispensers can boost sales of reconstituted frozen orange juice markedly, according to studies just completed by the Production and Marketing Administration of the U. S. Department of Agriculture.

The PMA surveyed sales of the juice at drugstores, lunch counters, and soda fountains in six stores in Washington, D. C., and six in Richmond, Va. Results showed that distribution of the juice from mechanical dispensers averaged about 18% greater than sales from the customary jugs or pitchers.

The government study showed that the juice would keep in good condition in the mechanical dispensers for at least two days after it was reconstituted, and that the dispensers, properly cared for, assured good sanitary quality in the beverage. Fountain managers agreed that the efficiency of service was improved, and that waste of juice, especially from breakage of old-style glass containers and jugs, was reduced.

## Profits Rise Sharply

Results of the survey should make a substantial sales argument for merchandisers of mechanical refrigerated juice dispensers. The researchers made it clear that turnover, and thus profits, can be substantially increased for fountain and lunch room proprietors who use the dispensers.

Fountain managers in each of the cooperating stores were questioned by field enumerators at the end of each month as to the operation, handling, and cleaning of the dispensers. They all stated that the mechanical dispensers were "much faster" than the jug method of serving juice, and that all types of dispensers made it possible to serve more customers during the rush hours. This improved service was attributed mainly to the fact that mechanical dispensers did away with the shaking and handling of the jug before each serving which is necessary to agitate or distribute evenly the insoluble solids present in

the juice. The mechanical dispensers are equipped with automatic agitators which assure even distribution of these solids.

Most operators considered that the mechanical dispensers were outstanding in their ease of dispensing the juice, since they were easily accessible to all employees, and there is an even flow of juice from the machines as compared with the irregular flow of juice from the jug-type dispenser.

## Eye-Appeal Important

There was no doubt in the minds of these managers that the mechanical dispensers were an improvement over the older method of jug dispensing. The dispensers proved to be a more efficient method of serving orange juice, and more than 75% thought their orange juice sales had been increased during the months when dispensers were in operation. "Eye appeal" was considered to be the main reason for the increase in sales, as customers were attracted by the appearance of the machine.

In the Richmond test, it was found that five of the six test stores had "significant sales increases" from the use of mechanical dispensers. A more detailed analysis showed that smaller stores tended to have greater success with the dispensers than the larger stores. The effect of dispensers on sales could be observed also by comparison with sales with corresponding months a year earlier, when all sales had been from jugs. In general, while the quantity of jug sales in the five comparable stores were similar to sales by the same method a year earlier, dispenser sales were substantially greater than jug sales. Laboratory tests showed the quality of juice sold from dispensers was fully equal to that from jugs.

## Decline In Ascorbic Acid Slight

The researchers made a controlled laboratory experiment to check the merits of mechanically-refrigerated dispensers for handling frozen orange juice. It was found that the ascorbic

acid level of the juice showed a continuous decline after the juice was reconstituted, but the rate of loss was small enough that most of the nutritive value of the juice was retained for at least two full days.

It was noted that the dispensers should be capable of maintaining a fairly constant temperature of 38° F. The dispensers in the stores actually checked in Washington, D. C. and Richmond had temperature variations, ranging from 33° to 50° F. The researchers recommended that fountain managers avoid putting the refrigerated dispensers close to coffee urns, kitchens where heat might be communicated to the dispenser itself. They also said the dispenser should not be placed in a non-ventilated area, where the heat produced by the refrigerating unit itself cannot escape.

## Growth of Frozen Orange Juice Industry Studied

The study summarizes the growth of the frozen juice concentrate industry and gives a hint of greater potentials in the future. From an initial production of 226,000 gals. of frozen concentrate during the 1945-46 Florida orange season, this product has now developed into one of the principal frozen food items processed in the United States. The Florida production for the 1949-50

season was about 21,647,000 gals.

"It is the opinion of many associated with the citrus industry," the study concluded, "that the volume of orange juice sales can be greatly increased. Increased sales volume . . . probably can be realized in any of its forms through improved preparation and dispensing. The consumer of orange juice should be assured that he is receiving the product in its highest nutritive state, with its natural color and flavor."

Discussing the mechanical aspects of dispensers themselves, the researchers pointed out that the capacity of such machines should be limited in order to assure the consumer a fresh product at all times. They should also provide adequate protection for the reconstituted juice against the loss of its initial nutritive values, color, and flavor. Air and room temperature must be excluded as far as possible.

"Last but not least," the study said, "the machine should have the combined merchandising factors of attractive design and color or 'eye appeal'—a very important factor in promoting greater sales volume through impulse buying."

## United Names Export Firm

HUDSON, Wis.—United Refrigerator Co. here, manufacturer of bottle coolers, beer dispensers, ice cube makers, upright freezers, reach-ins, and walk-ins, has announced the appointment of Scheel International, Inc., 4237 Lincoln Ave., Chicago, as export representative for the United line beyond the continental limits excepting only the territories of Hawaii, Canada, and Puerto Rico on beer dispensers.

## Nash-Kelvinator Will Make Pratt & Whitney Aircraft Engines

DETROIT—Nash-Kelvinator Corp. announced that it has received a letter contract from the U. S. Air Force to build large quantities of Pratt & Whitney R-2800 "Double-Wasp" aircraft engines.

Present security regulations prevent disclosure of the total amount of the contract.

George W. Mason, president and chairman, said the order is for 18-cylinder radial air-cooled Pratt & Whitney Aircraft engines of about 2,100 hp.

An advanced version of the type produced by the thousands by Nash-Kelvinator in World War II, the new R-2800 engines are used in Air Force trainer and cargo planes and Navy fighters, trainers, and cargo planes.

A large building program will supplement existing Nash-Kelvinator factory facilities, Mason said. The engines will be assembled in Kenosha, Wis. and tested in the facilities built there for World War II production. Some component parts will be manufactured in existing buildings in Milwaukee and Kenosha.

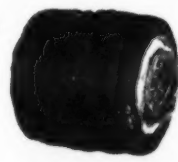
Other major contracts for aircraft components have been under negotiation for some time.

Mason said the company's ability to produce automobiles and home appliances will not be impaired by the new aircraft engine program. Car and appliance production will continue, with volume determined by government restrictions on critical materials.

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				H	W	D
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130-BB	130	220	43.84	20"	15 3/8"	6 1/2"
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# Control of Liquid Temperature Finds Increasing Use Throughout Industry

## Future Usefulness of Refrigeration for Such Applications 'Almost Unlimited'

"Control of the temperature of liquids through mechanical refrigeration is contributing to increased and more dependable production in an increasing number of manufacturing plants all over the country."

The above statement was made by A. B. Newton, vice president in charge of engineering for Acme Industries, in a recent talk before the Erie (Pa.) section of American Society of Refrigerating Engineers.

Its implications point to a virtually unlimited field where those in refrigeration can expand their services to industry and at the same time contribute even more than they are now to the defense program.

By A. B. Newton, Vice President, Engineering, Acme Industries, Inc.

The tremendous amount of expansion in comfort cooling and industrial uses of air conditioning since the end of the second world war has been increasingly evident to those of us associated with the refrigeration and air conditioning industries.

During the last two or three years, there is another expanding use of refrigeration which has assumed relatively an even greater rate of expansion. This is the use of mechanical refrigeration for controlling the temperature of water, cutting oils, hydraulic oils, processing baths and solution in industrial plants. In fact the effect on production of such uses of refrigeration has already become so great that its future usefulness seems almost unlimited.

Control of the temperature of liquids through mechanical refrigeration is contributing to increased and more dependable production in an increasing number of manufacturing plants all over the country.

I might say too, that the same basic equipment which is now expanding its use into industrial processing is being used in increasing quantity for air conditioning, both comfort and process, not only on the large jobs where its use has been common for years, but on smaller and smaller installations.

This is being brought about by the requirements of local codes, by experience which has shown how much more easily the installation may be made if chilled water is circulated to units, and by the tremendous savings in installations sometimes available because of decreased usage of extended air distribution systems. Chilled water installations provide easier zoning and local control, and in areas where experienced people to work with sheet metal have not been available, they have made it possible for members of the plumbing trade to easily install air conditioning jobs. Now units are available in packaged form in the smaller horsepower ranges from stocks all over the country to handle the air conditioning demands as well as the majority of the industrial requirements.

Package equipment of this type is easily moved about either if an owner changes his location, as he may do in an air conditioned office or store, or in a factory where cooling may be needed at one time in one location and at other times in a different location.

### INDUSTRIAL LIQUID CHILLING EQUIPMENT

Before getting into some of the actual applications for industrial liquid cooling, let us first take a look at the basic refrigeration equipment now employed. A completely self-contained liquid chilling unit includes a direct expansion water cooler, a water-cooled condenser, sealed compressor, circulating pump, electric controls and liquid-to-suction heat exchanger. Units like this are made from two to 7½ hp. and are completely factory-assembled to produce and circulate chilled liquids.

Only electrical and water connections are required to install them. A larger unit which incorporates two compressors is available in 10 and 15-hp. sizes. This unit likewise is factory-assembled ready for operation and provides ready adaptability to operation at both 50% and 100% of capacity.

### RESISTANCE WELDER COOLING

A common use of liquid chilling equipment of this type in industrial plants is for controlling the temperature of electrodes or wheels in

resistance spot and seam welders. Many operations permit an increased electrode life and reduced interruption to production time when the electrode is cooled by refrigerated water instead of by well or city water. Furthermore, the usage of water may be extremely large when it is wasted after passing through the electrodes.

The normal range through the electrodes is between 8° and 10° temperature rise when city water or well water is used. If recirculated water of a controlled temperature is employed the temperature level may be lower, say down to 40° or so; or if there are reasons to go still lower a glycol solution may be used and recirculated at temperatures down as low as 0°.

The heat removed from the recirculated water is transferred to the condenser water circuit. Here a range of two or three times the permissible range for city water used in the tips may be employed thus conserving from two thirds to one half of the city water. Furthermore, even after it is passed through the condenser of the refrigeration system the water is usually at a low enough temperature so that it can still be employed to cool the transformer used with the welders.

### ADVANTAGE OF SYSTEM

This system has one advantage in that it overcomes the sweating problem frequently encountered where the cold city or well water is employed to cool the transformer. Such sweating is one of the most frequent causes of transformer failure.

Where spot welders are cooled, internal water passages are normally supplied inside the electrodes for the cooling water. The greater the amount of water circulated and the greater the proximity of the cooling chamber to the weld location the greater will be the benefits from the welder tip cooling.

With seam welders the wheels are sometimes cooled by jets of water playing directly upon them in which case refrigerated or recirculated water is seldom employed. However, on many installations this flow of water over the work is objectionable and provision is made for a flow of water through a chamber in contact with the wheel on one or both sides.

A properly placed "O" ring type of seal is usually employed. The particular application is usually a function of the process on which the equipment works, its location in the plant, and the desires of the plant master mechanic or welding engineer. Both central systems and local unitary equipment are used on applications of this type. The latter gradually becoming the most common.

### HYDRAULIC OIL COOLING

The increased use of hydraulic fluids such as oils for the control of automatic machine tools has also introduced some cooling problems. The tremendous amount of work performed by the oil circuit results in heating and in many cases it is impossible to control hydraulic oil temperatures at a low enough value to give repetitively good performance.

The oil not only needs to be cooled to maintain pumping properties but must be warm enough to enable hydraulic components to operate without delay. Eighty to 90° is a commonly used range. Hydraulic oils can be used directly in the chillers since they do not contain large amounts of sulphur or other materials which would be detrimental to the copper

tubes of the evaporator.

In sizing such equipment, the brake horsepower of the pump is usually converted to B.t.u. and considered to be the load on the system. Most hydraulic oil circuits are free from contamination by chips or grinding, but in case they are not free from such contamination, magnetic separators or weirs should be employed.

### TEMPERATURE CONTROL OF COOLANTS

In many machine tool applications the accuracy of the work, the life of the tools, and other factors involving the quality of the product are affected by the temperature of the cutting oil or coolant. A great deal of work has been done in the last eight or 10 years in applying mechanical refrigeration to temperature control of all types of coolants and on all types of operations. A typical application of unitary equipment for controlling the temperature of the coolant in large honing machines in an automotive plant is shown in Fig. 1. The weirs and magnetic separator for removing chips and other particles can be seen in the foreground, and close observation will show the 15-hp. self-contained liquid chiller mounted above the nearest honing machine and resting on the ceiling beams.

The trend is definitely toward unitary equipment such as that shown in Fig. 1, yet the possibility of a central coolant cooling installation of direct expansion chillers should always be considered where there are large concentrated demands which

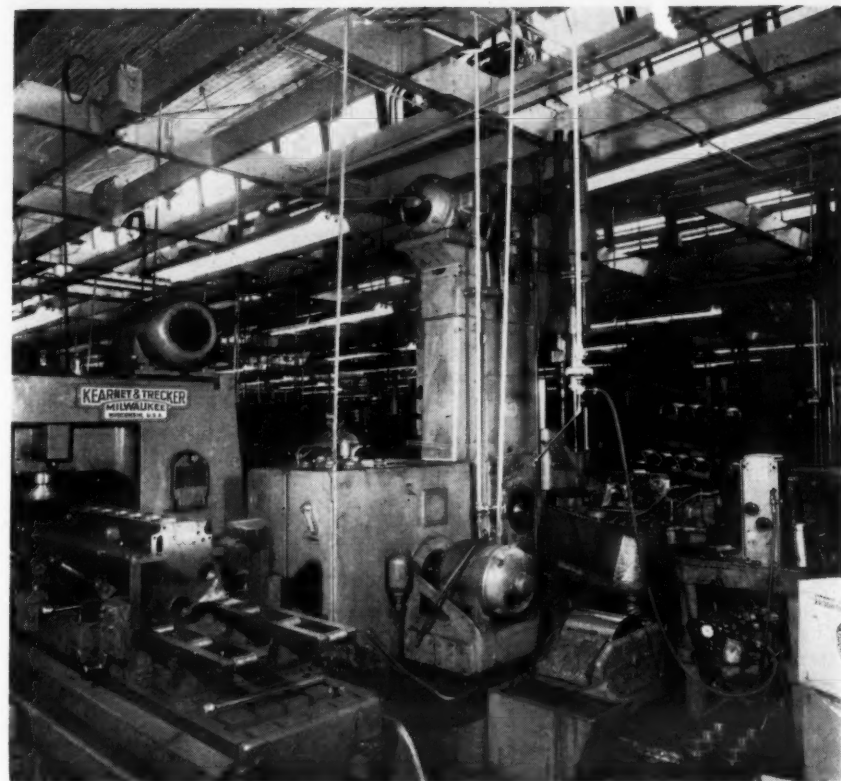


Fig. 1 shows how unitary refrigeration equipment is employed in an automotive plant to chill coolant for large honing machines. Liquid chiller of 15 hp. is mounted on ceiling beams (arrow).

cannot be conveniently broken down into smaller unitary systems.

Some machines such as thread grinders produce an exceedingly high temperature range in their coolants.

Where this is the case the unitary water-cooled machines are particularly useful since the first portion of the cooling may be done by the con-

(Concluded on next page)

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## Wide Variety of Industrial Applications For Liquid Chilling Cited by Newton

(Concluded from preceding page)

Condenser water and the second portion of recirculated chilled water, usually using a secondary heat exchanger. For example, a thread grinder may produce coolant temperatures as high as 140° and a controlled temperature to the machine of 60° or so may be desired. The condenser water can cool the coolant from 140° to approximately 100° and recirculated water can then take it on down from 100° to 60°.

The secondary cooler has other applications where the liquid to be cooled cannot be passed through the refrigerated chiller itself either because of inability to clean the fluid or because its characteristics would damage the metals within the chiller. Fig. 2 shows schematically how such a secondary heat exchanger may be employed.

Usually it is simply a double pipe heat exchanger arranged for counterflow with the inner tube carrying the coolant. Use of quick disconnect hose connections between the machine tool and the secondary exchanger permits easy cleaning of the continuous internal tube.

This internal tube may, of course, be constructed of any material such as stainless steel or lead lined pipe. If high range cooling is to be accomplished the outer pipe is broken down into two segments one of which handles the condenser water and the other the recirculated water.

Control of several individual secondary exchangers supplied with

recirculated water from a common Flow-Cold unit is easily possible with self-contained modulating valves or solenoids. Solenoids can be controlled by a differential type temperature controller arranged to maintain the coolant temperature at a predetermined number of degrees below room temperature and thus make gauging of the work more accurate and simple.

### MOLD COOLING

The rate of production in plastic and wax molds is frequently dependent almost entirely on the rate at which the molds can be cooled between operations. Therefore, in these days when molding equipment means long time procurement, a quick and ready way to increase production without additional space or machine requirements is to cool the molds with refrigerated water recirculated by a self-contained unit. The self-contained unit already provides the means of circulating water through the mold chambers.

The horsepower requirements of the refrigeration equipment can frequently be reduced by providing a small storage tank in which water is precooled to a controlled temperature such as 40° during the curing time in the mold, and thus some cooling effect stored for the time when the product is removed and it is desired to again cool the mold.

Some products such as waxed paper or containers have wax or other coating materials applied while

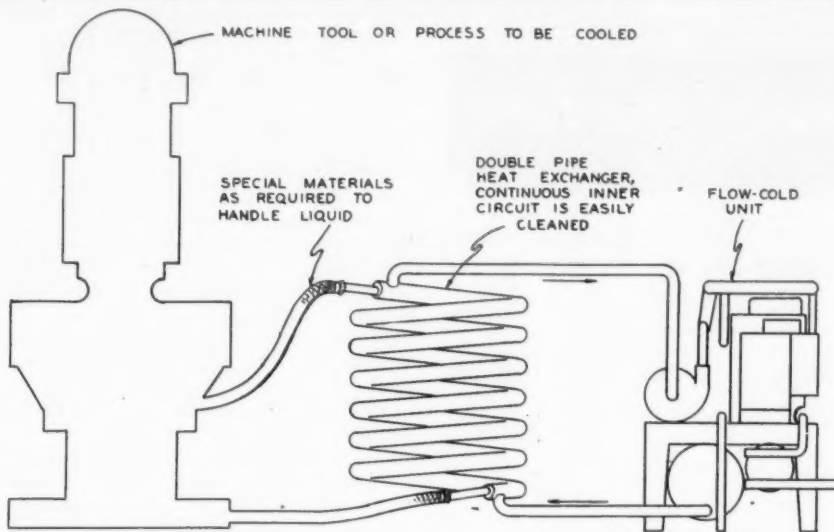


Fig. 2 shows schematically how a secondary cooler is used when liquid to be chilled cannot be circulated through refrigerated chiller because of characteristics of the liquid.

they move through the coating machine. In this case chilled water at a controlled temperature can be passed through the rolls around which the product travels, thus enabling the machine to be speeded up considerably. In most mold cooling, water is used as the cooling means and is circulated directly through the chiller of the refrigerated unit.

### PLATING AND ANODIZING BATHS

A great deal of heat is developed in plating and anodizing baths, and here again the rate of production can be increased by artificially holding the bath temperature within a desired range. Such baths contain acids of sufficient concentration to attack most materials such as steel and copper which are used in refrig-

eration equipment. As a result some means to transfer the cooling effect to the bath must be found.

Probably the simplest installation consists of a secondary heat exchanger such as that shown in Fig. 2 with a stainless steel inner tube such as Carpenter No. 20 and a stainless steel pump for circulating the bath through the exchanger. When this system is used, care should be taken to maintain the polarity of the exchanger in the proper relationship to the electrodes in the bath so that the inner part of the exchanger is not plated.

A second way of handling plating baths is to install within the bath itself a pipe coil type of heat exchanger through which refrigerated water passes. If the capacity of an existing tank is to be increased, a glycol solution may be circulated in the pipes already present. Usually such installations are made with a lead-coated pipe using approximately a 1-in. copper tube in a pipe coated with 1/4-in. of lead on the outside.

An additional lead pipe through which compressed air may be blown and which is provided with perforations below the main heat transfer coil serves as a means of increasing the heat transfer, often bringing it to a value of 50 to 75 B.t.u. per hour per degree F. M.T.D.

### QUENCHING BATHS

Quenching baths are, of course, for the purpose of rapid removal of heat from the objects placed in them. They may be used either as continuous baths or in a batch type of operation. It is common occurrence for the product to maintain high quality and freedom from rejects as long as the bath temperature itself can be kept below some top limit such as 80° or 90° temperature. A temperature as low as this can usually not be obtained by the use of city or well water only, and even if it can, the temperature rise in the well water or city water cannot be great, thus requiring a very large quantity of it.

Better conditions are obtained by controlling the temperature of the bath with the help of mechanical refrigeration either recirculating the bath through the chiller or using a secondary heat exchanger if cleaning or material requirements make it necessary.

The condenser circuit of the refrigeration equipment can usually employ a 20° or 30° range in city water whereas used directly only a 3° to 5° range could be used and even then the accuracy of controlled temperatures would be less. The saving in water requirements is thus extremely large and frequently more than pays for the refrigeration equipment within a year's time.

### SOLUTION COOLING

Solutions used in manufacturing processes frequently require cooling either because a controlled temperature below the temperature of the components is required, or because of the heat of solution developed as materials are mixed. A perfectly standard application of unitary equipment can usually be made by passing the solution through the chiller if it is of a nature which will not damage it, while using a secondary heat exchanger of the proper material if the solution components are corrosive or otherwise would damage the equipment.

Sometimes in solution cooling the maximum temperature difference in any part of the heat exchanger becomes an important factor. When this is true the use of the secondary exchanger, counterflow, and control of the refrigerated fluid so that the quantity gives the desired temperature range and, therefore, the desired

maximum temperature difference is frequently very helpful.

Where the heat of solution is the important factor, it is sometimes possible to cool a non-corrosive part of the solution, say water itself, to a temperature sufficiently below the final mixed temperature desired so that when the other parts of the solution are added the heat of solution or heat of other components will raise the entire solution to the desired temperature.

For example, if the heat of solution results in a 20° rise in the fluid and a final temperature of 70° is required, it can be obtained by cooling the water used to 50° before adding other materials. This permits the use of standard equipment without the use of secondary exchangers when they might otherwise be required to avoid corrosion problems.

### COOLING OF ELECTRONIC TUBES AND OTHER ELECTRICAL COMPONENTS

The rating of electrical and electronic equipment is frequently limited by the temperatures obtained under a given condition. Where a desired rating condition requires a dependable source of coolant, usually a water solution, at a temperature in the range of 40° to 60°, mechanical refrigeration is frequently a necessity.

The application is usually simple except that means must sometimes be employed to prevent transferring electrical potential to the cooling equipment. Rubber hose helps to minimize such an effect but the water used for cooling purposes may itself be a conductor. To avoid this a non-conducting oil may be employed or where pressure is not a detriment one of the low pressure "Freons" may be circulated as a liquid in the closed system.

### OTHER APPLICATIONS

Anyone who starts to make industrial liquid chilling installations will find many more places in manufacturing plants where the rate or quality of production can be greatly increased by the application of mechanical cooling. Also, there is the ever present requirement for refrigerated drinking water, the supply of which may be most economically handled by installing water coolers of 2 to 5 or 7 1/2-hp. capacity as required throughout the plant. Each cooler then supplies a definite number of bubblers on a recirculated system assuring a constant supply of refrigerated water.

All of the foregoing applications and many others besides can be handled with self-contained equipment. Thus, a single standard piece of equipment can be stocked for all common liquid cooling requirements encountered in a manufacturing plant. In terms of maintenance and repair and inventory this means a tremendous savings as it is no longer necessary to have on hand one type of equipment for drinking water cooling, another for resistance welder cooling, and others for cooling of baths, molds, or other applications.

## N-K 1st Quarter Earnings Reflect Rising Costs, Taxes, Price Controls

DETROIT—Nash-Kelvinator Corp. in the quarter ended March 31, 1951, began to experience the inevitable effect of advancing costs, price controls, and higher taxes, George W. Mason, president, stated in announcing the quarter's earnings.

Sales for the period totaled \$107,016,823 compared with \$101,835,155 in the preceding three months and \$112,513,857 a year ago. Net profit after provision for income taxes was \$4,554,442, or \$1.04 per share, against \$5,081,101, or \$1.17 per share, in the preceding quarter, and \$7,214,398, or \$1.66 per share, a year ago.

Sales for the six months ended March 31, 1951, the first half of the current fiscal year, totaled \$208,851,979 compared with \$187,923,490 in the corresponding six months last year. Net profit after income taxes was \$9,635,543, or \$2.21 per share, compared with \$11,430,248, or \$2.63 per share.

Production of both automobiles and appliances is scheduled for the current quarter at the highest levels permitted by the availability of steel and other materials, Mason said. Preparations for manufacturing a large number of 2,100-hp. Pratt & Whitney engines under a U. S. Air Force contract also are proceeding on schedule, he stated.

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universal application, flexible operation, sensitive response and wide availability, has made the 673 the true "STANDARD OF THE REFRIGERATION INDUSTRY!" When you install this tried and tested valve, you can do so with utmost assurance of a job well done. Make sure your stock of **DETROIT 673** Thermostatic Expansion Valves is adequate to meet all your service demands. See your **DETROIT** wholesaler today—he'll give you complete information on recent Government regulations which provide a means of securing material for Maintenance, Repair and Operating Supplies.

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## Current Literature Available

To obtain further information on the literature listed below, please refer to key number preceding listing. Please use the "Information Center" form on "What's New" page.

### Electrical Living Promoted In EEI Piece

—KEY NO. M-510—

NEW YORK CITY — "Dreams Come True When You Live Electrically," a large two-fold promotional piece for use by electric light and power companies and cooperating dealers to promote the trend toward electrical living, has been released by the Edison Electric Institute.

The full-color illustrations show kitchen, bath, laundry, living, and bedrooms, fully equipped with the various electrical appliances. The copy is informally slanted to women with emphasis on the fact that more leisure time is available, tasks are made easier, and home decorative effects are more interesting and appealing through the use of electrical appliances and lighting.

This promotional piece, designed for distribution to customers, may be used to excellent advantage at home shows, demonstrations, women's group meetings, home economics classes, housewares shows, and dealers display floors, the institute said. It is available from the Commercial Department of EEI at \$5.00 per 100.

### Oxygen Unit Described In Mine Safety Bulletin

—KEY NO. M-511—

PITTSBURGH — A bulletin describing the Mine Safety Appliances Co.'s new demand oxygen unit for emergency treatment of smoke or carbon monoxide inhalation has been issued recently by the manufacturer.

The bulletin, called CW-5, points out that the new oxygen unit can also be used in heart failure, asthma, and pneumonia cases.

Completely self-contained in a sturdy carrying case, the M-S-A demand oxygen unit is put in operation by opening the cylinder valve and placing the facepiece on the patient.

Oxygen is administered automatically as the patient's breathing requires it. This instrument also can be used to supply oxygen in conjunction with artificial respiration in cases of asphyxia.

The complete unit consists of a half-mask facepiece, regulator assembly, six-foot length of non-kinking breathing hose, a 40-cu. ft. capacity oxygen cylinder, and the carrying case.

### Maintenance Tips In Hussmann Booklet

—KEY NO. M-512—

ST. LOUIS — "Maintenance Tips for Your Refrigeration Equipment" is the title of a new booklet being made available by Hussmann Refrigeration, Inc. here. Although primarily intended for users of commercial refrigeration equipment, contractors and servicemen will find many helpful hints they can pass along to their customers.

The booklet was prepared from a series of articles written by J. H. Spense, Hussmann service manager, and covers such subjects as keeping condensers clean, proper motor installation and maintenance, causes of fading, discoloration, and like problems.

### Industrial Controls Covered In M-H Catalog

—KEY NO. M-513—

PHILADELPHIA — A 60-page catalog on industrial controls for temperature, pressure, flow, liquid level, and humidity was published recently by the Industrial division of Minneapolis-Honeywell Regulator Co., here.

It presents more than 100 different models of non-indicating electric, electronic, and pneumatic controllers that are used in industrial applications.

Among the additions to the previous line that are shown in this catalog are electronic, electric, and pneumatic insertion type temperature controllers; magnetic starters and contactors; pneumatic automatic reset relays; and both pneumatic and electric step controllers.

### Hotpoint Manual Offers Trade-In Selling Plans

—KEY NO. M-514—

CHICAGO — A new trade-in manual outlining six basic plans for operating a successful trade-in business is being offered to dealers by Hotpoint, Inc.

The 24-page manual, entitled "Trade for Profit," points out the historic part trade-ins have in the appliance business and outlines a specific program for a dealer to follow in handling a trade-in.

A list of reference books for use in appraising used appliances is included in the manual, together with an analysis of economic factors affecting the resale of second-hand merchandise prepared by Hotpoint's market research staff.

Check lists of parts for all appliances which may require recondition-

ing or replacement and an accounting system to determine cost of such reconditioning are included in the handbook to guide dealers in making appraisals.

The book also contains advice on establishing a certified guarantee program and specific instructions on radio, newspaper, and direct-mail advertising of used appliances.

Included with the manual are banners to identify the trade-in department of dealers stores and a supply of certified guarantee tags to identify trade-in merchandise, according to the company.

"The trade-in factor of the appliance business is bound to increase as buying returns to normal," E. R. Taylor, general sales manager of Hotpoint, said in announcing the program.

"We feel it should be a profitable part of a dealer's business and have prepared this manual from material developed by our market research department and from dealers who have increased their sale of new appliances by an aggressive, profitable trade-in program."

### New Bulletin Describes Acme Liquid Chiller

—KEY NO. M-515—

JACKSON, Mich. — A new two-page, two-color specification sheet is now available on the Acme Flow Cold liquid chiller. The sheet illustrates the single and dual compressor units and also shows the finned coils, convectors, and cooling towers which Acme manufactures.

Specifications, dimensions, and weights are given as well as additional ratings for all models are provided. Tabulation of performance at 40°, 46°, and 50° water off is also given.

Copies of bulletin 50 A-Rev. are available, without charge from any Acme representative or direct from the factory.

### CTI Booklet Covers Training Courses Offered

—KEY NO. M-516—

BIRMINGHAM, Ala. — A new booklet that pictorially describes the facilities for training in air conditioning and refrigeration at the Commercial Trades Institute was published recently by the school.

The booklet also outlines the course of study which is divided into two sections. One section is devoted to air conditioning and refrigeration and the other to electricity and major appliances. Either or both sections may be taken by the student.

The school says that it combines classroom work with practical shop training.

### Titchener Issues New Folder on Use of Wire

—KEY NO. M-517—

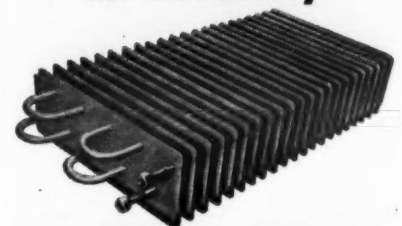
BINGHAMTON, N. Y. — E. H. Titchener & Co., here, has recently issued a new folder containing pertinent information about the design and production of wire forms, welded wire assemblies, wire and strip metal assemblies, and light stampings.

Specific instances of cost savings and more functional designs effected through the use of wire are cited. Particular reference is also made to the advantages of the use of wire in defense production.

Titchener's complete facilities are also detailed. Copies of the folder are available on request.

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The refrigeration coil that changed an industry stands today unchallenged for performance, user satisfaction and lasting durability. Made from only the finest materials by skilled craftsmen under exacting standards, every Larkin Coil features imbedded fin-to-tube contact, swaged connection, silfos welded construction, and staggered tubing. Write for complete details.

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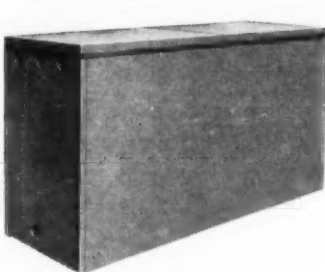
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## New DOLE Ice-Cels

GOOD NEWS FOR AIR CONDITIONING



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NEW  
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For years air conditioning firms have specified and installed DOLE Ice-Cels for chilled water cooling for peak loads of short duration—a few hours a day. They have proved to their complete satisfaction that Ice-Cel units save both on initial investment and on operating costs. In many cases the Ice-Cel unit may require no additional compressor because the unit can be charged at night when the machine is otherwise idle.

Now—DOLE has improved Ice-Cel performance even more. 3 new models, each with its definite capacity range and all with new and improved design, are ready for your important air conditioning jobs. If you have used DOLE Ice-Cel units, you'll like their improved performance. If you don't know the advantages of Ice-Cel units, write today for complete information and prices.

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# TELLING and SELLING

A GUIDE TO SMART ADVERTISING AND  
MERCHANDISING PRACTICES

This series of articles comprising ideas and principles for the small retail or manufacturing business is written by James D. Woolf, who was for more than 20 years a vice president and director of J. Walter Thompson Co., one of the largest advertising agencies.

By James D. Woolf

## Low State of Retail Selling

In another place I wrote recently that "over-the-counter" salesmanship is one of America's greatest business myths. I asserted that a disgracefully large proportion of retail salespersons know how to make change and wrap up packages, and that is about all.

Outraged critics accuse me of talking through my hat. It is obvious, they charge, that I have had no experience in the retail field. When they make that statement they are talking through their hat. I cut my eyeteeth in business over four years as a salesclerk in a paint and wall-paper store and then in a shoe store. Looking back, I realize now that I knew as much about real salesmanship as a country carpenter knows about architectural engineering.

As recently as four years ago, I was the part owner of a large jewelry and gift shop. My staff consisted of one young man and three women, two young and one middle-aged. They were the best I could get, selected with great care from a score or more of experienced applicants; but it soon was clear that they knew practically nothing about the art and science of salesmanship—and cared less.

I lugged armfuls of textbooks on salesmanship to the store, but my clerks would not read them. They paid no attention at all to manufacturers' literature. Among the hundreds of items the store carried, to cite but one example, was the Parker "51" pen. But not one of my clerks could demonstrate it skillfully, explain it intelligently, and sell it

persuasively.

The pens, however, sold well, thanks to the informative and per-



"But not one of my clerks could demonstrate it skillfully, explain it intelligently, sell it persuasively."

suasive character of the Parker national copy.

## A FRUSTRATING EXPERIENCE

Recently I had occasion to buy a water heater for my home. It was a frustrating experience. At the first shop I visited I was waited on by a young woman, the only attendant in the place. She was pathetically ignorant on the subject of heaters, and together we bent our heads over a catalog in search of information.

No sale.

I then phoned the gas company, and shortly thereafter one of its "salesmen," an ex-GI, called on me. He knew next to nothing about the heater and less than nothing about salesmanship, berating his competitors in a tactless and offensive manner.

No sale.

I then visited another shop and was waited on by the proprietor in the fortunate absence of his clerks during the lunch hour. This man not only had a thorough technical understanding of his merchandise, but he knew how to talk about it in a persuasive and convincing manner. I bought.

Is this experience of mine more or less general? If you think not, I add no further. If you believe it is, then it has a bearing on advertising that is important to you.

## YOU HAVE A STORY

It doesn't matter what you make or sell. Whether your merchandise or service is boats, beer, building supplies, belting, banking, or a bar of candy, you have a STORY to tell. There are many good things about your merchandise or service you are most anxious to have thoroughly understood by the consuming public.

How are you going to put your story over? Sure, clerk education is an absolute must—as far as it goes. But are you willing to entrust the telling of your story solely to hundreds of thousands of store attend-

ants whose sales skill, in an enormous number of cases, is the mere ability to make change and wrap up packages?

You have a wonderful "mouth-piece" for telling your story in your advertising. Are you using it for all it is worth? Are you packing it full of information about your merchandise or service, or have you been content to have your copy merely "remind" or "entertain?"

I have before me a letter from the executive editor of the most successful trade journals in its field. He writes:

"Speaking of informative copy, we have just bought a Ward's refrigerator, after reading all the hoopla about the other lines. The reason is that the Ward copy answered all our questions. Yet we also have two other nationally-advertised appliances and could just as well have bought again from the dealer who sold them to us. But we happened to look over Ward's catalog—and that ended our search."

The italics in the above quotation are mine: "The Ward copy answered all our questions."

## WHAT'S WRONG WITH INFORMATION?

Doesn't it make sense that advertising should answer consumers' questions? Not all of them, obviously; but the important ones? Isn't that the very essence of effective selling—and of good public service and public relations?

A Crosley Car advertisement features this headline: "NEW PRICE REDUCTIONS on all Crosley Cars!" Four new models are illustrated, and we are told that the prices are \$63 to \$86 less. But the prices—even approximate ones—are not stated.

Don't you agree that what a prod-



"The reason is that the Ward copy answered all our questions."

uct costs is one of the first questions the consumer wants answered? And do you think the current MERCURY advertisement, which tells us that the car is "Lively as a base stolen!" and "Sturdy as the man behind the plate!" answers our questions INFORMATIONALLY?

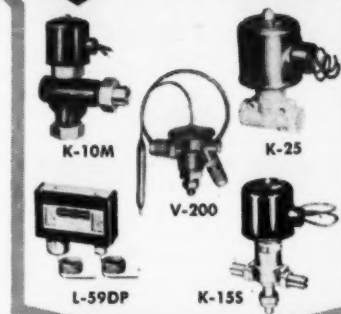
I believe devoutly that both retailers and national advertisers should exert themselves to the limit in retail clerk education. I believe that trade papers can be used more intelligently and aggressively by advertisers in telling their dealers how to sell their products more effectively and profitably.

But, in addition, what's wrong with consumer education through the instrumentality of our advertising copy? Isn't it well to remember, too, that retail salespeople are also exposed to what we say in our consumer advertising?

## NEW PRODUCTS?

Turn to "What's New" Page for useful information on new products. Use Key No. for fastest service.

## 1st choice for AUTOMATIC CONTROL



GENERAL CONTROLS

801 ALLEN AVENUE GLENDALE 1, CALIFORNIA

Manufacturers of Automatic Pressure, Temperature, Level and Flow Controls

FACTORY BRANCHES: Baltimore 5, Birmingham 3, Boston 16, Buffalo 3, Chicago 5, Cincinnati 2, Cleveland 15, Dallas 2, Denver 4, Detroit 21, Glendale 1, Houston 6, Indianapolis 5, Kansas City 2, Minneapolis 2, Newark 6, New York 17, Philadelphia 23, Pittsburgh 22, St. Louis 3, San Francisco 7, Seattle 1, Tulsa 6, Washington 6. DISTRIBUTORS IN PRINCIPAL CITIES

Curtis REFRIGERATION

Packaged Air Conditioning Units 2 to 15 Tons  
Condensing Units 1/4 hp. to 40 hp.

Curtis Refrigerating Machine Division of Curtis Manufacturing Company

1912 Kienlen Ave. St. Louis 20, Mo.

Established 1854

For reliable motor service

for Air Conditioning and Refrigeration

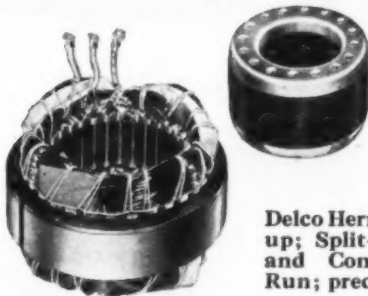
# DEPEND ON DELCO

It is an axiom in the industry that Delco always delivers, and this applies to the faithfulness with which Delco meets its production commitments quite as much as it does to the efficiency of the motors themselves. A nationwide organization, supplying service and replacements in the field, further strengthens the value of any Delco-operated equipment.

## DELCO MOTORS

### DELCO PRODUCTS

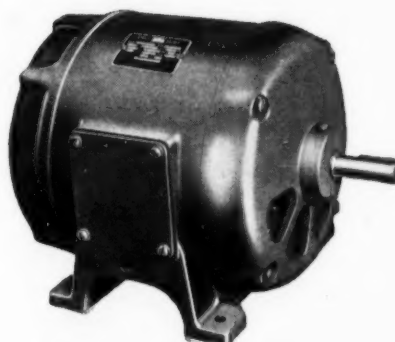
Division of General Motors Corporation  
Dayton, Ohio



Delco Hermetic Motors, 1/16 h.p. and up; Split-Phase Condenser Start, and Condenser Start-Condenser Run; precision made, long lasting.



Delco Single-Phase, Repulsion Start-Induction Fractional Motor, 1/2 through 3/4 h.p. Also in these sizes (only) with Condenser Start.



Delco Single-Phase, Repulsion Start-Induction Integral Motor, 1 through 5 h.p. Polyphase Integral, 1 through 100 h.p.



Delco Single-Phase Fractional Motor with Current-Limiting Capacitor, 1/8 through 1/2 h.p. for blowers and open type compressors.

SALES OFFICES: CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DETROIT • HARTFORD • PHILADELPHIA • ST. LOUIS

**CLEANABLE WATER-COOLED CONDENSERS**  
More Efficient Double-Tube Counter-flow Design

1/2 to 25-Ton Capacity

WHOLESALE IN PRINCIPAL CITIES  
Write for Catalog and Prices  
**Halstead & Mitchell**  
BESSEMER BLDG. PITTSBURGH 22, PA.

YOU CAN'T GET ALONG WITHOUT THIS NEW PARTS CATALOG

**HARRY ALTER'S**  
SPRING-AND-SUMMER 1951  
**DEPENDABOOK** No. 154

OVER 9,000 REFRIGERATION PARTS AND SUPPLIES

• To successfully conduct a business in these days of scarcities, you really need DEPENDABOOK No. 154...If it's available you'll find it listed in this latest edition.

WRITE FOR YOUR COPY ON YOUR LETTERHEAD

**THE HARRY ALTER CO. WHOLESALE ONLY**  
128 SOUTH MICHIGAN AVENUE CHICAGO 16, ILL. 134 LAFAYETTE STREET NEW YORK 13, N. Y.

"Service doesn't falter when it comes from Harry Alter"



# Silver-Brazed Joints at Sub-Zero Temperatures

Laboratory Tests Show Good Results In Practical Applications;  
Handy & Harmon Representative Answers Questions on Soldering

By C. Dale Mericle

DETROIT — Although little is known in the laboratory about the "Strength of Silver-Brazed Joints at Sub-Zero Temperatures," such joints have proved satisfactory in practical applications for several years, points out A. W. Swift, service engineer for Handy & Harmon, producer of silver brazing materials.

Discussing the subject before the Detroit section of the American Society of Refrigerating Engineers, Swift reviewed results of some laboratory tests and cited practical applications.

Questions and answers also developed some interesting and timely suggestions on silver soldering, particularly in view of present and prospective material shortages.

"During the past 10 years there have been an increasing number of refrigeration applications at sub-zero temperatures, and the problems encountered in handling such things as liquid nitrogen and oxygen are becoming more common," Swift said.

"At the insistence of the Army, tests were conducted at Stevens Institute on the strength of silver brazing alloys at sub-zero temperatures, because quite a variety of parts for aircraft use involved silver solder joints. The Air Force also conducted tests at -90° F. to simulate conditions found at high altitudes or in the Arctic.

"The tests at Stevens were conducted on the alloy itself, but practical experience and experiments have shown that silver brazed joints are usually stronger than the metal itself, provided that the joints are properly designed."

Results of the Stevens tests indicated that the physical properties of silver brazing alloys generally improved at low temperatures, Swift declared, explaining that the tests involved alloy strips 9 in. long by 3/4 in. wide by 1/16 in. thick.

Ultimate tensile strength of Easy-Flo, for example, was 64,645 p.s.i.

at 72° F., but this had increased to 66,150 p.s.i. at a temperature of -100° F. The yield strength was greater at low temperatures, and while elongation drops off slightly as the temperature goes down, it remains substantially level. The brazing alloy also withstood a greater impact at the lower temperatures than at room level, Swift said.

"One of the best recommendations for using silver solder in low temperature applications is in the oxygen business. Here copper tubes and fittings are subjected to temperatures as low as -320° F. And recently we received an inquiry about the performance of silver-brazed joints at temperatures below -400° F."

## Using Fillets for Joints

A color-sound movie picturing various applications of silver brazing concluded Swift's formal presentation but led into numerous questions from the floor. The first one sought more details on a matter touched upon in the movie—providing fillets for silver brazed joints to achieve more strength.

"A rounded fillet instead of a square cut-off will give more strength to the joint and is used by the Air Force for this reason," Swift explained.

"Such extra strength isn't necessary in the refrigeration and other industries, however, so we've stayed away from recommending fillets. As the Stevens tests showed, the ordinary joint is stronger than the materials commonly used in refrigeration. You should also remember that fillets require extra solder, so there's no point in using this additional solder if it isn't necessary.

"You should also remember, too, that the fit specified for making a brazed joint is the fit of the joint when it's up to the brazing temperature. The fit should be in the order of .0015 in. clearance (or .003 in. across the bore) when the pieces are

at brazing temperature. Too much expansion of the metal at heat would cut this clearance and not give good capillary action to pull in the solder."

## No Harmful Effect on Copper

"What effect," Swift was asked, "will the heat of brazing have on the crystalline structure of copper tubing?"

Apparently it has no harmful effect, the speaker said.

"For example, railroad car refrigeration units are subject to extreme vibration, and the railroads have been using silver brazing for years with no ill effects on the copper. Silver brazing is also used on shipboard where tubing and joints are subject to vibration."

What is the temperature range of silver solder, that is, at what temperature will it flow, asked another.

"Easy-Flo 45 flows at 1,145° F.; standard Easy-Flo at 1,175° F.; Silfos at 1,300° F. Others flow at temperatures up to 1,600° F."

"Will silver solder flow into a pressed joint, one that won't separate at brazing heat?"

"This wouldn't be so good," Swift replied. "One objection to a tight press (.006 in. to .008 in. press) is that it wipes off all the flux and prevents getting a good joint. What's usually done is to use a .001 in. to .002 in. press which opens to a clearance of .002 in. at heat. This will work, though the solder won't flow into the joint as far."

"What about shortages and substitutes?"

"There will be shortages," Swift admitted. "Silfos is an 80% copper alloy and we have been cut back to 75% of the copper we used in the first six months of 1950 by M-12. There have been no restrictions placed on Easy-Flo 35, however, which has only 16 1/2% copper. With this solder, though, you have to use

a flux, which isn't necessary when Silfos is employed in copper-to-copper joints.

"In using Easy-Flo 35 as a substitute for Silfos you have to be very careful with the flux. We'd suggest that in making a joint first insert that tube about two thirds of the way into the fitting. Apply flux to the exposed area and then bottom the tube before brazing. This puts just a small amount of flux in the joint but it's enough to give a good brazing job.

"Standard Easy-Flo can also be used as a substitute for Silfos, but Easy-Flo 45 is out of the picture because of cadmium restrictions."

"Why do silver soldered joints on factory equipment sometimes develop a leak after five years or so?"

"The only reason I know of," Swift suggested, "would be where the flux hasn't been completely removed. Flux will stand up under 200-lb. leak tests but it may wear off after six months to five years in the field and leakers will develop. Responsible manufacturers try to avoid this by carefully cleaning out the flux."

"How many ways are there to remove flux?"

"Some manufacturers spray water on the joint immediately after brazing. Others put the whole piece of equipment in water. In the field, we suggest you wipe off the joint with a wet cloth. Hot or boiling water is best."

"We have encountered a considerable amount of oxidation with Silfos in the field. Is there any way to avoid it?"

Swift said that "some people have blown a shot of nitrogen through the system just before brazing to exhaust the oxygen. You could also use carbon dioxide to blow out the air. If you use Easy-Flo you're down 150° under Silfos and less oxide forms. What does form doesn't scale off."

In this connection one member of the Detroit section recalled using nitrogen as described to prevent oxidation, but with no success. At a last resort, natural gas was piped through the system, being burned at the end opening.

"Believe it or not, the joints were silver brazed with no oxidation."

"In the field some operators over-heat while brazing, which causes the alloy to bubble, resulting in a poor joint. What should be done then?"

"You could put flux around and reheat the joint to pull it apart. Always use flux again to clean the metal. Then you can rebraze. Unfortunately, it's always the joints that are hardest to get at which give the trouble. That's because it's so difficult to get a good brazing job on them."

## M-H Names New Managers, Adds 18 Men to Brown

PHILADELPHIA—Three new industrial managers and 18 additional men have been assigned by Minneapolis-Honeywell Regulator Co. to the field staff of its Brown Instruments division, it was announced recently by William H. Steinkamp, field sales manager of the industrial division.

Joseph H. Matulis has been named industrial manager of Honeywell's Chicago branch, Willard Smith of the Pittsburgh branch, and Joseph H. Bowman of the Buffalo office.

The 18 men added to the company's industrial field staff and the cities in which each have been assigned were announced by Steinkamp as follows:

Merle O. Evers has been assigned to the San Francisco office; Frank J. Stevens to Los Angeles; William R. Coffman, Kansas City; Edward I. Espy, Pittsburgh; Robert R. Stalaker, Denver; Richard G. Daniels, Washington, D. C.; Cyril L. Griesbaum, St. Louis; Douglas J. Nankervis and Daniel J. Miller, Chicago; Lawrence R. Keenan, East Orange, N. J.; Paul E. McKenzie, Louisville; Donald D. Russell, Twin City; Edgar M. Corson, Milwaukee; Harry F. Odgen, Dallas.

Also, William S. Stroud, Knoxville; Louis D. Gercken, Charlotte; Harry L. Kay, Richmond; and John R. Morrison, Greenville.

In addition, Steinkamp announced the following have been reassigned: Richard B. Winchester to Rochester, Robert A. Wolfe to Albany, Ed. H. Fiedler to Indianapolis, Louis C. Schultz to Peoria, Clarence W. Swanson to Des Moines, Ralph Brogie to San Francisco, and Fred Akerson to Boston.

# 4 REASONS WHY

DISTRIBUTORS AND DEALERS  
GO FOR



Breeze Conditioning

A COMPLETE  
LINE FOR  
HOMES AND  
BUSINESSES

The complete Coolair line includes wall and window units, single and twin attic package units, and commercial and industrial units up to 9' blade diameter.

A REALLY  
VALUABLE  
FRANCHISE

A market area large enough for real money-making opportunities is yours under your Coolair Franchise.

SALES TRAINING  
THAT  
MEANS SOMETHING!

Factory supervises training of authorized dealer personnel. Profits from your Coolair Franchise start right away!

HARD-HITTING  
ADVERTISING  
AND PROMOTION

Up-to-the-minute Coolair advertising and promotion help pave the way for profitable sales.

HERE'S LOW-COST COOLING  
FOLKS WILL BUY!  
THIS SALES PLAN BOOSTS  
YOUR PROFITS HIGH!

Get your share of cooling profits by mailing this coupon TODAY. No obligation.

AMERICAN COOLAIR CORPORATION  
Leaders in Air Cooling for 23 Years

Dept. ACR-51—American Coolair Corporation  
Jacksonville 3, Florida

Please RUSH us more information about the Coolair proposition for 1951. We are interested in ( ) a dealership. ( ) a distributorship.

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
TOWN \_\_\_\_\_  
ZONE \_\_\_\_\_ STATE \_\_\_\_\_

SERVICE ON  
THE SPOT  
IN 3  
EASY STEPS



- loosen cap screws
- raise power element
- lift out cage

Now the valve is ready for cleaning or repair without removing it from the line. If you want to change capacity, just change the cage.

## EASY—ISN'T IT!

This simplified construction also reduces friction—gives faster valve action. All internal parts are made of corrosion-resistant brass or stainless steel. For "Freon 12," "Freon-22," Methyl Chloride.

For further details, write for Bulletin 171.

See your ALCO wholesaler!



ALCO VALVE CO.

853 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers  
of Thermostatic Expansion  
Valves; Pressure Regulating  
Valves; Solenoid Valves;  
Float Valves; Float Switches.



## Glycolator Model Designed for Use In Commercial Air Conditioning System

### Vapors Penetrate, 'Massacre' Bacteria To Purify Air

VALENCIA, Pa.—Three types of glycol vapor dispensing devices that treat air to aid in the prevention of colds are being manufactured by the Glycolator division of the Iron City Chemical Co. here.

One of the Glycolator models is designed for use in conjunction with existing or new air conditioning systems and will sanitize up to 1,000,000 cu. ft. of air.

The second is designed for use in forced air furnaces for homes and small commercial establishments. The third is a portable model equipped with a built-in fan that blows germ-killing glycol vapors directly into the air of the space being treated.

#### HOW IT WORKS

Here is how glycol vapor air treatment works, as explained by the company. When vaporized, triethylene glycol has a remarkable affinity for moisture. Sometimes it is used in air conditioning systems as a dehumidifier.

Since bacteria and viruses are composed largely of water, glycol vapors penetrate them and absorb their body moisture, thereby causing a "massacre" that quickly rids the air of germs.

As little as 3/100ths of a gram of glycol has been known to completely sterilize a chamber containing 12,000,000 bacteria.

#### VAPOR IS NON-TOXIC

According to the manufacturer, laboratory experiments at Dartmouth Medical School, the University of Pennsylvania, and other institutions have proved conclusively that the vapors have no harmful or toxic effect on humans and animals.

In one experiment, he said, 17 monkeys lived in a fog of triethylene glycol vapor for as long as a year. They not only remained in good health organically, but were disease-free for the entire period.

In three full winters of testing at the Children's Seashore Home at Atlantic City, glycol vapor-protected children had only 13 infections while the unprotected children had 10 times as many.

Only three colds were noted in the glycol-treated areas as compared with 79 in untreated areas. Ear or throat infections numbered two for glycol-protected children and 21 for others.

The commercial air conditioning model of the Glycolator is available in various styles depending on volume requirements. The unit consists of a storage tank for the liquid triethylene glycol (Glycosol), which an automatic meter injector feeds, in measured amounts, to an electric vaporizing unit attached to a horizontal air duct.

Here the vapors are mixed with the air and distributed by the air conditioning system. The storage tank holds 10 quarts of Glycosol—sufficient for hundreds of hours of operation, depending upon the area being treated.

Estimates as to cost and size of proposed installations depend on the average relative humidity, number of air changes, and percentage of fresh air make-up.

#### MONARCH ATTACHED TO FORCED AIR FURNACE

The Monarch Glycolator for homes and small commercial establishments is attached to the side of the average forced air furnace. Equipped with thermostatic controls and a patented metering injector for "feeding" Glycosol to the vaporizing chamber, this unit has a small fan which injects glycol vapors into the forced air stack, between the furnace filter and fan.

Regular furnace operation then distributes the germ-killing vapors along with the heated air.

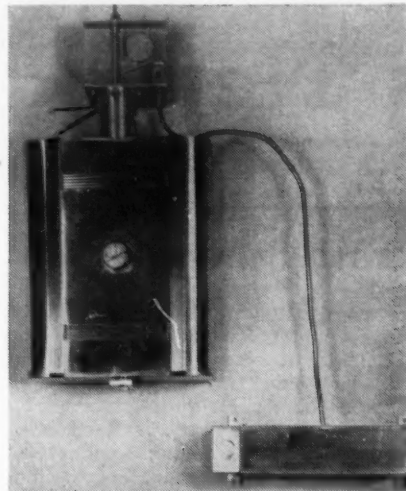
The heating element is made of Chromalox and the unit can be plugged or wired into 115-volt a.c. lines. The regular tank contains one quart, enough for 600 hours of operation. Larger tanks, up to 2 1/2-gal. capacity, are available at extra cost.

The Monarch Glycolator is capable of treating up to 50,000 cu. ft. of area or 100,000 cu. ft. of air per hour.

The Regal Glycolator is the port-



REGAL portable Glycolator model with built-in fan.



MONARCH Glycolator model for smaller commercial establishments and homes.

able unit that is housed in a two-tone metal case. It is similar mechanically to the Monarch; the only difference is that the built-in fan simply releases the glycol vapors directly into the air of the space to be treated. Volume and capacity are the same as for the Monarch.

#### PREPARING ADVERTISING

The Glycolator division said that it is preparing an extensive advertising campaign for the next "cold season" to increase public acceptance of its product.

Biggest selling point, the company believes, is in the reduction in colds and therefore a reduction in absenteeism for the customer. Restaurants and other public food serving establishments can be sold on the basis of increased sanitation, particularly during the periods when colds and other respiratory diseases are prevalent.

## Warm Air Heating School Scheduled for Buffalo June 15 and 16

CLEVELAND — The National Warm Air Heating and Air Conditioning Association has announced the addition of Albany, N. Y. to its list of cities where Indoor Comfort Conferences are being conducted during 1951.

This two-day warm air heating school is scheduled for Friday and Saturday, June 15 and 16. Promotion and arrangements for this conference are under the direction of C. L. J. Ager of H. B. Kimmey Co., Inc., Albany, acting chairman.

Addition of this school brings the total number of conferences being held this year to a record 31. Eleven classes are still on the schedule, 20 having been completed. Remaining conferences follow:

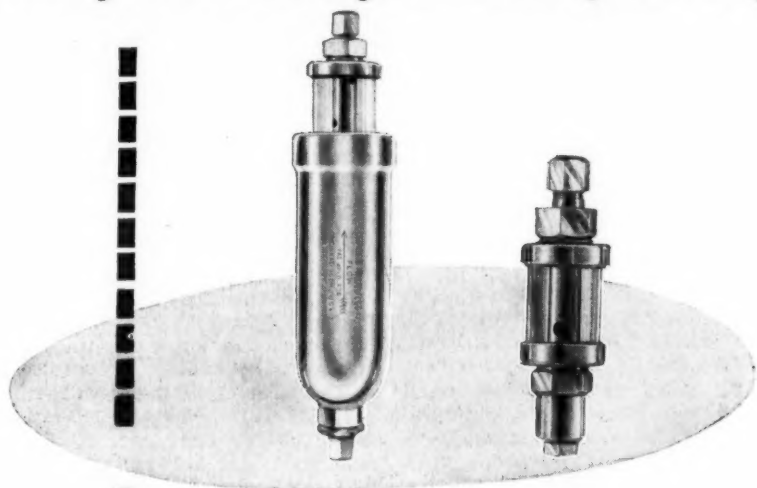
Milwaukee—April 30-May 1; Minneapolis—May 3-4; Billings, Mont.—May 7-8; Omaha, Neb.—May 11-12; Des Moines, Iowa—May 14-15; Fort Wayne, Ind.—May 25-26; Detroit—May 28-29; Bay City, Mich.—May 31-June 1; Kalamazoo, Mich.—June 4-5; Albany, N. Y.—June 15-16; Utica, N. Y.—June 20-21.

#### MORE INFORMATION?

Use Handy Coupon on "What's New" Page of this issue.

Use Key No. for fastest service.

## PROMPT DIAGNOSIS—NO LEAKS... every service job satisfactory



### Makes Trouble VISIBLE

You don't guess — you KNOW — what is wrong, instantly, when you use Cee-Kleer, the only combination Sight Gauge-Drier on the market.

There's no searching in the dark because Cee-Kleer gives full 360° vision for fastest diagnosis of all operating troubles.

Cee-Kleer Driers trap sludge, wax, moisture and fine foreign particles. They are easy to clean and refillable — and there's not a *leaker* in a *carload* of them. Use this Cee-Kleer combination sight-drier on your next service job. Believe me, you'll continue using them to make every service job satisfactory.

Ask your Distributor for Cee-Kleer. If he cannot supply you, just use the handy coupon and we'll be glad to send you any size you need until your distributor's stock arrives.

**Cee-Kleer**  
PRODUCTS, INC.  
947 W. Sixth Street  
Cincinnati 3, Ohio

Please ship..... Cee-Kleer Sight-Driers; size.....  
My Distributor is.....  
Name.....  
Address.....

## 1951 SERVEL SUPERMETICS

Rugged, dependable, sealed commercial refrigeration units with long life and efficient trouble-free performance backed by Servel's amazingly Liberal 5-YEAR FACTORY WARRANTY.

These improved 1/4 and 1/2 HP units are offered in both medium or low temperature designs. Each incorporates all the tried and proved features that have made Servel Supermetics increasingly popular with refrigeration users everywhere.

plus

- ★ More Compact Design
- ★ Internal Spring-Mounted Motor-Compressor
- ★ Quiet Operation, Factory-Lubricated, Refrigerant-Cooled Motor

**Servel**  
SUPERMETIC  
Models for every commercial refrigeration and air-conditioning use... 1/5 to 5 H.P.



MODEL 24  
(1/4 HP MEDIUM OR LOW TEMPERATURE)  
MODEL 32  
(1/2 HP MEDIUM OR LOW TEMPERATURE)

To get complete information about Models 24 and 32 and all the other Servel Supermetics for '51

Mail the coupon today...

SERVEL, INC.  
ELECTRIC REFRIGERATION DIVISION  
DEPT. A-51 EVANSVILLE 20, IND.  
Send complete information about Supermetic Units for '51

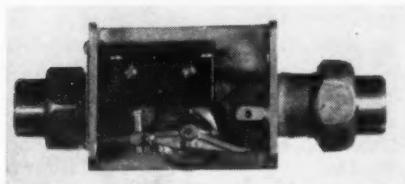
NAME (personal).....  
TITLE.....  
COMPANY.....  
CITY..... ZONE..... STATE.....



## What's New

When requesting further information on new products, please use "Information Center" form.

### G-E Shows Improved Water Flow Interlock Device



—KEY NO. A-510—

SCHENECTADY, N. Y.—An improved flow interlock, a device which responds to a flow of water to open or close an electrical contact, has been announced by General Electric's control divisions.

According to company engineers, the new design includes a finer differential, union fittings at both ends, a bronze piston, reduced size and weight, simpler adjustment, and more wiring space.

In operation, the device closes a contact when a flow of water exceeds a pre-set amount and opens it

when the flow falls below the pre-set amount. Working under this principle, it actually acts like a fuse in a circuit which depends upon water cooling for protection.

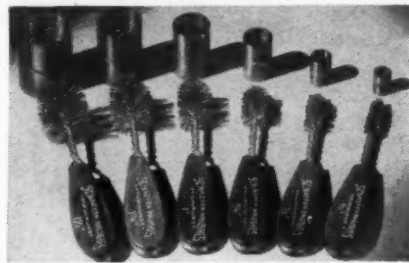
The interlock can be used as a safety device in many applications, including hot water heaters, welding units, kitchen waste units, transformer cooling, induction heating, television luminaires, water-cooled dynamometers, and the like.

Only one screw adjustment is needed to set the circuit for any flow from one half gallon to four gallons per min. The flow differential between the cut-in and cut-out of the electrical contact is 0.1 gal. maximum. The interlock does not control the amount of water flow. This can be accomplished, if desired, by installing a throttling or regulating valve ahead of the device.

The new control is available complete with union fittings at each end, and a strainer attachment. The strainer keeps foreign matter out of the housing, engineers said, while the double union fittings simplify installation into a line. For strainer cleaning purposes, only one fitting need be removed.

An enlarged switch housing makes wiring easy, and is protected from water damage by a triple-seal cork and chamois insulation.

Designed to operate for the amount of flow independent of pressure, the interlock is intended only for cold-water applications.



### Schaefer Wire Brushes For Copper Tube Fittings

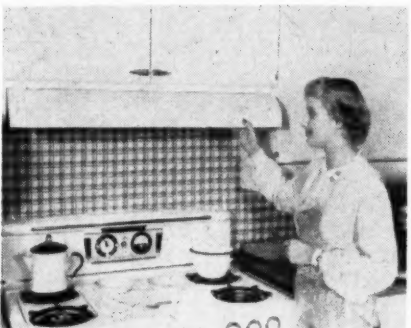
—KEY NO. A-512—

MILWAUKEE — Cleaning out copper tube fittings for quick, tight connections is said to be made easier and speeded up with new Schaefer copper tube fittings brushes.

Made of stainless steel wire with hand-fitting handles, the brushes clean out tube fittings "with just a few swift turns," according to Schaefer Brush Mfg. Co. here. Precision-built in standard sizes for 1/4-in. to 2 1/2-in. o.d. fitting sizes, they "provide uniform and accurate cleaning, without danger of high spots or grooves," the company said.

The brushes can be obtained in a complete set of 12 at about \$9.30, or in individual sizes ranging from 55 cents to \$1.20 as needed. They are available through refrigeration wholesalers.

A companion set of brushes for cleaning the outside of tubing and pipe ends is also available. Called the Schaefer copper pipe cleaning brushes, they fit over the tube end and clean "with an easy turn."



### Air Control Unit Housed In Kitchen Cabinet

—KEY NO. A-513—

AURORA, Ill.—An air control unit housed in a kitchen cabinet for installation above the range has been announced by the Lyon Metal Products Co. here.

Air is discharged through the unit at the maximum rate of about 350 c.f.m. and is ducted to the outside. Lifting the hood starts the blower in operation.

The cabinet that houses the air control unit is designed to provide an attractive appearance to the kitchen and extra storage space at a convenient location.

A specially designed filter collects all grease and dirt before it enters the flue.

For cleaning with hot water and soap, it can be pulled out like a drawer.

Flexible connections prevent vibration transmission. The unit is operated by a 1/15-hp. G-E permanently oiled motor. Its specifications are 1,500 r.p.m., 60-cycle, and 115 volts a.c.



### Bonney Forge Has New Torque Wrench Series

—KEY NO. A-511—

ALLENTOWN, Pa.—A new series of torque wrenches for 3/8-in., 1/2-in., and 3/4-in. square drives has been announced by Bonney Forge & Tool Works here.

The new torque wrenches feature a broad, pre-tested tension bar and, because of their long, thin design, "provide easy access to tight spots."

Handles are pivot-mounted to maintain a constant leverage radius. A calibration scale is available in foot-pound or inch-pound calibrations as desired.

### Furnace Control Can Be Used with Packaged Units

—KEY NO. A-514—

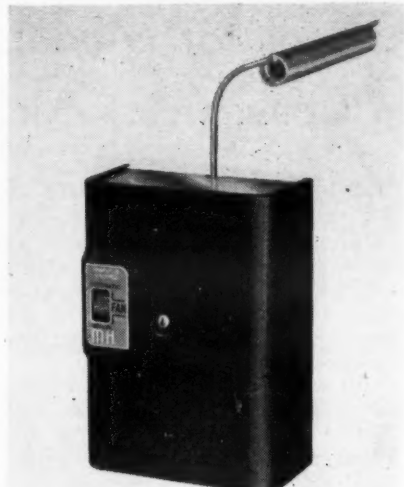
MINNEAPOLIS — A new Combination Furnace Control featuring a single flexible sensing element and a fail-safe limit switch has been introduced by Minneapolis-Honeywell Regulator Co.

Built for simplified installation and adjustment, the new control is also suitable for use with packaged heating units of compact design.

Furnace manufacturers can mount the device flush within the recess of the furnace casing where it is easily accessible though completely protected and out of sight. It has a single flexible sensing element which is available in 10, 20, 30, 40, and 60-in. capillary lengths. The sensing element readily can be placed in the most desirable plenum location.

The element and the sealed capillary are thermostatically compensated for ambient temperature changes, so that the device is affected only by air temperature at the sensing point in the plenum.

The safety feature of the device is based on the fact that the fill of the sensing mechanism remains at subatmospheric pressure. Should a failure occur such as a rupture in the element, the fill would be subjected to atmospheric pressure; thus



under such a circumstance the equivalent of an excessive temperature condition would be sensed. The limit switch would then break the circuit to the burner, and the fan switch would start the fan. Excess heat, if present, would be dissipated immediately to protect the furnace.

The fan switch has an interlocking mechanism which holds the maximum "off" setting 15° below the "on" setting to protect against any possible maladjustment that could affect operation of the fan control.

A convenient switch permits manual operation of the fan for summer ventilation.

### Schmidt Has New Line Of Bakery Freezers



—KEY NO. A-515—

CINCINNATI — A new line of refrigerated equipment for freezing baked goods has been introduced by The C. Schmidt Co. here.

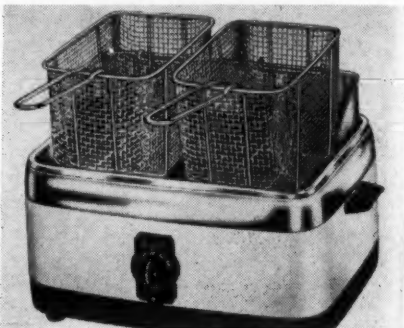
Use of the equipment enables bakers to eliminate completely their losses in "stales," according to the manufacturer.

The "Bake-N-Freeze" line consists of walk-in, reach-in, and table-type freezers.

The walk-in refrigerator is for the "big production job," the company said. Bakery racks are loaded with baked goods on trays and wheeled into the freezer where they remain until needed.

Equipped with tray slides, the reach-in occupies less than 14 sq. ft. of floor space. This "Bake-N-Freeze Jr." is for use by bakers who do not have room for a walk-in.

The "Table Chest" is a combination work table and freezer designed for the baker who does not have space for either the walk-in or the reach-in.



### Dulane Introduces New Electric Deep Fryer

—KEY NO. A-516—

RIVER GROVE, Ill.—An automatic electric deep fryer provided with twin baskets and a back splash guard and offering a choice of wattage and voltage has been brought out by Dulane, Inc. here.

Designated model F-3, the appliance measures 16 1/2 in. long, 11 1/8 in. wide, and 8 1/2 in. high including the back splasher. It is finished in baked white enamel with chrome and black trim.

The "Fryrite" has a one-piece cast aluminum well. Capacity is given as 12 to 14 lbs. of shortening or 12 to 14 pints of oil.

The twin baskets, it was pointed out, permit cooking of double quantities of one food or two different foods at the same time.

Other announced features include a thermostatic temperature control calibrated from 250 to 450°; an expansion chamber to retard bubbling over; an asbestos pad in the bottom to absorb heat; and a new type of imbedded heating element. A steak rack can be had as an accessory.

The item is available with ratings of 1,650 watts, 15 amp., 110-120 volts a.c.; 2,200 watts (special T plug), 20 amp., 110-120 volts; and 3,200 watts (3-prong plug), 14 amp., 220-240 volts. Net weight is 13 lbs., 1 oz.

## Inspect America's Finest Line of Restaurant Refrigerators

AT THE NATIONAL RESTAURANT ASSOCIATION CONVENTION and EXPOSITION  
BOOTHS 832 and 833 . . . CHICAGO NAVY PIER . . . MAY 7-11

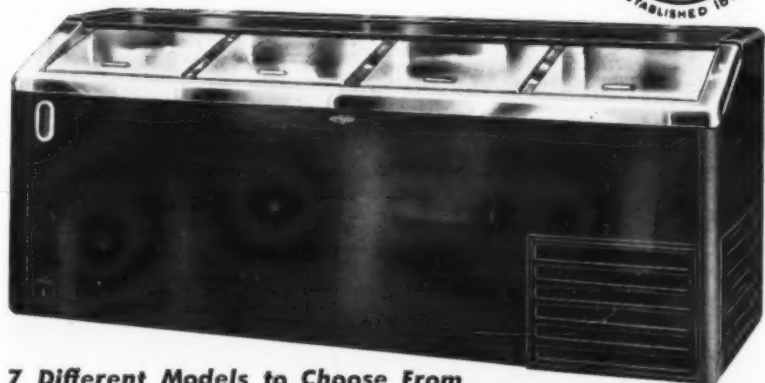
Featuring

REACH-IN CABINETS  
SALAD CABINETS  
PASS-THRU REFRIGERATORS  
DRY BEVERAGE COOLERS

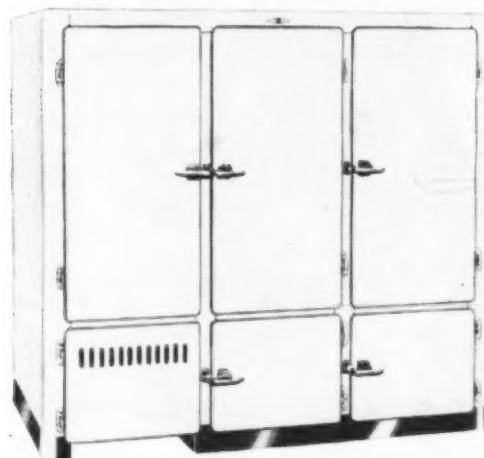
With Exclusive P-H Grad-U-Matic Air Conditioning  
and Life-Time Porcelain or Stainless Steel.

PUFFER-HUBBARD MFG. CO.

GRAND HAVEN, MICHIGAN



7 Different Models to Choose From

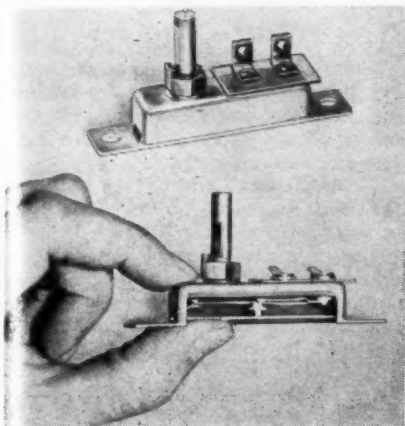


51 Different Models to Choose From

DISPLAY CASES • DAIRY-DELICATESSEN CASES • PASS-THRU CABINETS • DRY BEVERAGE COOLERS • DOUGH RETARDERS • FLORIST CABINETS • WALK-IN COOLERS



## What's New (Cont.)



### Stevens Thermostats Designed for Appliances

—KEY NO. A-517—

MANSFIELD, Ohio—A new line of snap-acting bimetal strip thermostats for use in appliances and other devices requiring "sensitive, precise" control of high-wattage heater loads has been announced by Stevens Mfg. Co., here.

Designated as Stevens Type W snap-action thermostats, the new units are in volume production and available in either adjustable or non-adjustable styles, each with a variety of terminal arrangements. They are interchangeable with other units of approximately the same size.

Among advantages claimed for the units are operation with a fixed differential as close as 5° F. in a 400° F. temperature range. In addition, Type W thermostats are said to be non-radio interfering.

"Featuring an electrically independent bimetal that effectively eliminates artificial cycling and 'jitters,' Type W thermostats closely follow temperature of controlled device and respond rapidly to temperature changes," the company explained. "The stainless steel contact spring is crimped along its outer edges so that positive pressure is exerted on the contacts until the actual instant they snap open with an over-center action of the spring. This action prevents arcing and prolongs contact life."

### Fiber-Loy Vanes Claimed To Last as Long as Units

—KEY NO. A-518—

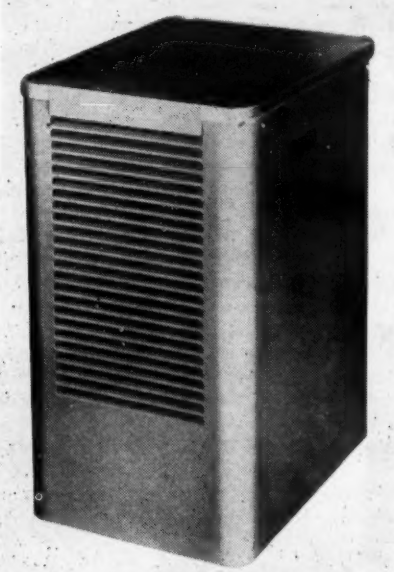
LONG ISLAND CITY, N. Y.—Wagner Tool & Supply Corp. here is releasing to the refrigeration industry a new material now being manufactured in the form of rotary vanes for the Coldspot unit.

This material known as "Fiber-Loy" has been tested for 14 months in the Wagner laboratories. Results of these tests indicate that Fiber-Loy will withstand acids, moisture, and corrosion.

Fiber-Loy is basically a fine linen fiber impregnated with a thermosetting plastic. It is unbreakable, easily fitted, and exceptionally quiet.

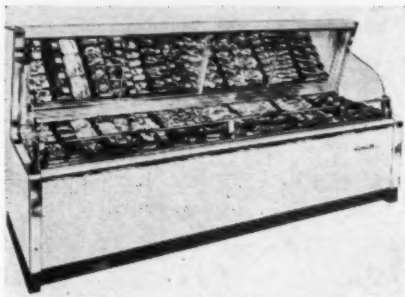
Wagner indicates that these vanes will be sold with a guarantee that they will outlive the unit.

### CORRECTION



Carrier Corp. portable 1/4-hp. "Humidry" unit designed for dehumidification jobs in home basements, vaults, storage rooms, and similar locations where small plug-in unit is needed. A picture (under Key No. A-446) shown in the April 23 issue was in error.

### McCray Has New Line of Self-Service Meat Cases



—KEY NO. A-519—

KENDALLVILLE, Ind.—The McCray Refrigerator Co. has announced a new line of single duty self-service meat display cases known as the McCray GS-line.

The cases will be available shortly in two lengths, 8 and 11 ft., without superstructure, or with a choice of clear plate glass, sliding transparent, or "one-way" mirrors.

The cases are built for either deep volume display for heavy shopping traffic, or shallow display when

traffic is light. Seven shelf positions are possible.

The cases are all steel shell construction. Exterior finish of the superstructure is baked enamel. The front panel is white porcelain. A stainless steel bumper rail at the front protects the case from damage by shopping carts.

A 3/4-in. plate glass forms the ends of the display section in the cases having superstructure. A two-glass Thermopane section having an anodized aluminum protective rail forms the front of the display section.

A 1/4-in. tempered plate glass baffle 3 in. high is placed at the front of the display shelf inside the display area. This glass baffle will resist chipping and breakage.

Full length Slimline fluorescent lamps in the superstructure illuminate the case.

The GS-8 is 98 1/2 in. long without ends; 105 1/2 in. with ends. Length of the GS-11 is 131 1/2 in. without ends; 138 1/2 in. with ends.

### Water Demineralizer Has Permanent Cartridge

—KEY NO. A-5110—

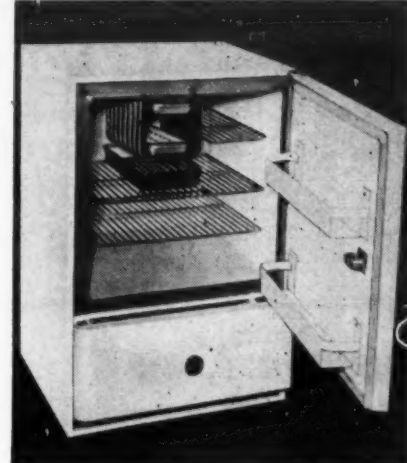
MERIDEN, Conn.—Penfield Mfg. Co. here has announced the availability of a new permanent cartridge demineralizer for users of up to 10 gals. per hour of water.

Designed to attach to any wall near a tap, the new unit is equipped with a "Flow Meter," a sight indicator that enables the operator to adjust intake flow to the proper rate for producing water comparable to distilled in solids-free purity.

Functioning on the ion exchange

principle, the "easily removed and re-filled" cartridge is said to do away with the need of purchasing new cartridges and screens when the resins require replacing.

An electric conductivity meter built into the Penfield unit "provides continuous visual indication of the quality of the treated water, warning when the resin charge should be renewed," the company said. "With raw water containing 5 grains of solids, one resin charge will provide 200-230 gals. of demineralized water."



### Moss Atlas Lowboy Offers 2 Shelves on Door

—KEY NO. A-5111—

BROOKLYN—A lowboy refrigerator with two shelves on the door has been introduced by the Moss Atlas Corp. here.

The model G4, 4-cu. ft. Paley lowboy also features a reversible door so that the refrigerator can be used for either right or left hand installation.

One of the two ice cube trays can be removed to provide storage space for frozen foods. The storage bin at the bottom provides additional utility space. Over-all dimensions are 34 1/2 in. high; 24 in. deep, and 24 in. wide.

Other features include a Tecumseh 1/4-hp. hermetically sealed unit with 5-year warranty, and white baked enamel finish. Suggested retail price is \$189.95.

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—sell more condensing units

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know that Filtrine products meet government specifications.

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**Sell your own condensing unit . . .** with coolers backed by Filtrine's 40-year dependability. 1. Government and general acceptance for high efficiency—dependability—20-year life construction. 2. High capacity—super storage. 3. Handsome exterior (all stainless steel or Duco with stainless trim). 4. Equipped to suit with top and/or side shelves. 5. Bubblers, glass-fillers, front, back or all sides. 6. Can be "Taste-Master" equipped to banish chlorine and insure sparkling water.



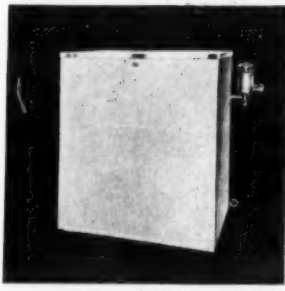
MC-14-S MC-25-S  
MC-43-S MC-40-S



No. 4  
"Taste-  
Master"  
Filter

### COOLERS FOR X-RAY & PHOTOGRAPHY

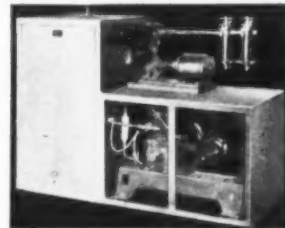
**Sell your own condensing unit . . .** with these Filtrine coolers pre-approved by military and V.A. medical procurement offices, Signal Corps, Air Force, etc., for X-Ray darkroom and photo-lab installation. 1. Dependable water of correct temperature for film processing. 2. Large storage for heavy duty and emergency requirements. 3. High efficiency, economy operation—20-year life construction. 4. Floor mounted with stainless steel work-table top; also under-counter models. 5. Filters (extra) prevent scratched and pinholed negatives.



PH-7 PH-14 PH-25

### REMOTE COOLERS FOR ALL USES

**Sell your own condensing unit . . .** with Filtrine coolers suitable for new and replacement installation everywhere: barracks, military depots, mills, schools, post offices. 1. Capacities 5-800 g.p.h.—storage 7-300 gallons. 2. High efficiency—20-year life-span. 3. Insulation—2" hydrolene-sealed corkboard. 4. Filters and Rectifiers/Dechlorinators available for all sizes.



Typical "Packaged"  
Circulating Chilled Water System

### PACKAGED CIRCULATING CHILLED WATER SYSTEMS

**Sell your own condensing unit . . .** with complete Filtrine systems for circulating drinking water in offices, hospitals, industrial plants . . . for processing water as low as 34°. 1. Completely packaged for streamlined engineering, quick installation. 2. Capacities 5 to 400 g.p.h.—Storage 5 to 150 gallons. 3. Equipped with heavy-duty pump. 4. Your condensing unit factory installed. 5. Insulation—2-inch hydrolene-sealed corkboard. 6. 20-year life construction. 7. Filter-Rectifier assembly (extra) to kill chlorine and keep water sparkling.

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# Refrigeration Problems

## and their Solution

by Paul Reed

For Service and Installation Engineers



Paul Reed

## How To Avoid Making Mistakes

There is probably nothing that irritates the customer more, results in more arguments, or costs the service engineer more lost time and money, than call-backs. How nice it would be if we were able to diagnose the trouble quickly and correctly every time, so that the repair could be made at once! No one makes a perfect score. The longer a man has been doing servicing the more mistakes he has made, but he should make them less frequently.

Experience is a great teacher, but it is an expensive teacher and a hard taskmaster. Experience should teach us not to make the same mistake again, but sometimes it only enables us to recognize the same mistake that we made before.

Like a businessman casting up his books at the end of the year to determine how much money he made that year, perhaps it might be helpful to review some of our mistakes in an effort to not only recognize the mistake itself, but more important, to recognize the reason why we made the mistake.

It seems obvious that the reason for the great bulk of mistakes is the lack of knowledge. None of us will ever know all there is to know, even about one small part of a subject. All that we can hope to learn is enough that our mistakes become less and less frequent. The more a man learns, the more he realizes how little he knows.

### 2 SOURCES OF KNOWLEDGE

Our knowledge comes from two sources; what we learn from someone else, and what we find out for ourselves. Of the two, the first is much easier, quicker, and cheaper in

time, money, and headaches. Moreover, there are several ways in which we can learn from others: from schools, educational societies, books, magazines, lectures, exhibits, and from trading of information between our fellow workers. We should take as much advantage of these means of gaining knowledge as we can.

Finding out for ourselves is called Experience. It is the hard way. It is made up of busted knuckles, backaches, sweat, dirt, and short tempers. It is the slow way. We cannot live long enough to learn much by finding it out for ourselves. It is the expensive way. We find out for ourselves on our work time; when we are making our money, the time that we can't afford to waste.

Knowledge is the difference between a common laborer and a skilled workman, whether that knowledge came from books or from experience. It is the only excuse we have for calling ourselves service engineers; for expecting a higher rate of pay than that of a laborer. The more knowledge we have, the more that we are worth in our services to others.

There is not a one of us but who can recall many instances in which a lack of knowledge caused us to make mistakes, costly mistakes, sometimes dangerous mistakes.

### MISTAKES COST MONEY

Take Joe, who did not know that an ice cream cabinet should never be multiplied on the same condensing unit as a water cooler. Joe fought that installation for months, and finally lost a good customer over it. Joe did not charge the user much more than one half of the time that Joe put in on the job, but the customer had paid Joe a lot of money. The job was always out of order, and the customer had lost a good deal of ice cream.

Finally he called Fred. Fred sold the customer another condensing unit

so that the ice cream cabinet had its separate condensing unit. Joe lost one of his best customers and the profit on the new condensing unit, just because he did not know.

Pete oiled the fittings of an oxygen cylinder. Pete spent weeks in a hospital, lost an eye, and almost died; just because Pete did not know. It was in one of his safety bulletins, but Pete did not read the bulletin.

Lack of knowledge is too costly a luxury for anyone to afford.

### CARELESSNESS TAKES TOLL

But lack of knowledge is not responsible for all mistakes. Carelessness takes its toll. Carelessness characterizes the work of a sloppy servicemen who has no pride in his work or proper respect for the interests of his customer. Carelessness shows in his work, and it hits his pocketbook. It causes call-backs and expensive lost-time, time that he never gets paid for. Doing the job right in the first place is a lot cheaper and much more profitable. Carelessness wrecks machines, loses customers, gets men fired, and is the most frequent cause of accidents.

Jim was not careful when he put on a compressor pulley; he did not pull the nut up tightly. The pulley came loose, finally came off and rolled down the aisle and through a big plate glass window. Jim got fired, but his boss had to pay for the window and lost a good customer besides. Luckily no one was hurt.

Tom was not so lucky. Tom did not weigh the "Freon" into his service cylinder, and got too much in. It

burst in the car while Tom was driving out on his service call. Tom was killed, his new car that was not fully paid for was wrecked. Tom's wife had given birth to their first child a week before. Tom's carelessness brought disaster not only to him but to his wife, whom Tom adored and would not have harmed for anything in the world.

Carelessness does not always react so violently. Jerry went on a service call, found the job low on charge. His test torch was in the car a block or so away, but Jerry saw some oil on the compressor under the shaft, so he decided that the seal was leaking. He put on a replacement seal that he happened to have in his tool kit, added 5 lbs. of refrigerant, and collected \$24 from the customer.

Five days afterward, the job was down again. The customer could not get Jerry on the phone, so he called Carl. Carl found the replacement seal leaking some, but also found a big leak in the suction line tubing behind the cabinet. The customer was so angry that when he did get Jerry on the telephone a day or so afterward, he not only bawled him out, but cancelled his order that he had given Jerry a short time before for a new blower coil for his walk-in cooler.

Bill worked in the factory that made compressors. He worked on the assembly line. Carelessly he dropped a cotter-key into the crankcase of a compressor and forgot to take it out. It got by inspection, but showed up after the compressor had been installed about a month. The cotter-key got jammed between the connecting rod bearing and the throw of the crankcase and "froze" the compressor.

The dealer's serviceman opened the compressor, found the cotter-key, showed it to the boss, who took it up with the factory and Bill got laid off for a week, right when he was about to buy a new television set. Moreover, the user, who had lost some meat, swore that he would never buy that make of condensing unit again. And all because of Bill's carelessness.

This could go on for pages, and

there is not a reader that could not add several cases that he personally knows of.

Carelessness, like lack of knowledge, is also too costly a luxury for anyone to afford.

### RUSHING THE JOB

Another cause of mistakes is rushing the job too much. In these days we have to work fast in order to meet competition and make any money.

Nevertheless, there is only so far that we can go; and that limit is good workmanship. If we have to rush so much that we cannot do a good job, the customer is going to suffer, and ultimately we are going to suffer. It finally catches up with us.

### SKINNING THE JOB

Another mistake is what is known as "skinning the job"—undersizing the tubing, speeding up the compressor instead of using the next larger size, purging the lines instead of pumping a vacuum, and similar practices that are contrary to good, recognized, time-tested methods. Like carelessness they catch up with us eventually also.

The man never lived who did not make mistakes. We all do, lots of them, but surely we are not proud of our mistakes. We can feel pride in avoiding mistakes and doing good, workmanlike jobs, regardless of the nature of our work.

But from a purely selfish viewpoint, we can't afford to make mistakes.

They cost money, they cause extra work for us, and sometimes we get hurt making mistakes. So it pays to keep our mistakes to the very minimum.

## How To Test a Capacitor

Commercial Trades Institute Describes Method for Fractional Horsepower Sizes

CHICAGO—How to test a capacitor on a fractional horsepower motor was described recently by the *Skilled Tradesman*, publication of the Commercial Trades Institute here.

"The symptom of a weak capacitor," the publication said, "is that the motor will be sluggish in getting started. If the capacitor is dead, the motor will not start at all under its normal load."

It continued:

"To test, proceed as follows:

"Disconnect capacitor from the motor. The leads are connected either with solder or small screws.

"Touch the two capacitor posts with the two leads of a 110-volt line. This charges the capacitor.

"Now take a short piece of insulated wire and touch the two capacitor posts. You should get a nice, cracking spark (similar to the spark off a spark plug, only much stronger); this is when the capacitor discharges.

("Note: the capacitor, even if in

good condition, will only give one good cracking spark for each time you charge it with 110 volts.)

"If you get only a weak spark, or none at all, the capacitor should be replaced.

"Extreme caution should be used in discharging the capacitor with a piece of insulated wire, or any other way. The capacitor builds up the voltage two or three times above line voltage. If a person got a shock off the capacitor after charging, it would give him quite a jolt.

"Capacitors are rated in Microfarads (MFD's). This rating is stamped on the capacitor. In replacing a capacitor, look for the rating on the old one and replace it with one of a similar rating.

"These ratings are given in a range, such as 115-128 MFD's. This size would be suitable for a 1/8, 1/4, or 1/2-hp. motor. Larger motors should have a little higher rated capacitor. They are also made in various dimensions, both cylindrical and rectangular."



"They must like the Marsh line the way they go for it"

The kind of words a manufacturer likes to hear were being spoken by Bill Davidson, General Manager of Hinshaw Supply Co. (center) to Ross Price of Marsh Instrument Co. (left) when the picture above was taken in this San Francisco supply house.

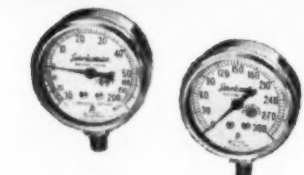
Operating branches in Oakland and Sacramento, this up and going concern has achieved its success by the formula that never fails... equipment of highest quality backed by prompt, understanding service. "Marsh is our kind of equipment," says Mr. Davidson, "because it is our customers' kind—the kind that keeps them coming back for more." Gil Mead, experienced Hinshaw counter man, was right there to second the motion in no uncertain terms.

In every section of the U. S. you will find progressive firms like Hinshaw Supply who handle the full line of Marsh Gauges, Thermometers and Marsh Electromatic Valves. They handle Marsh because they know it will give the kind of service that enables their customers to do a better job. Popular Marsh products are described here. For complete facts—

See Your Jobber

MARSH INSTRUMENT CO.

Sales affiliate of Jas. P. Marsh Corporation  
Dept. D, Skokie, Ill.



A great pair of instruments for the service man who wants the ultimate in testing gauges. Just two of the many Marsh Gauges—refrigeration gauges for all purposes.



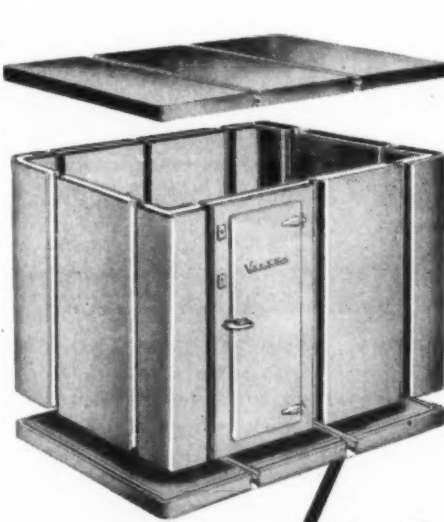
This is the "Serviceman" thermometer that Bill Davidson is holding. It's the greatest tool in the testing kit.

One of the many Marsh Electromatic valves—the type WP Water Regulator. The full line includes suction throttling valves and solenoid valves in a wide range of types and sizes.



**MARSH**

Refrigeration Instruments



YOU CAN'T BEAT  
THE VICTOR  
Refrigerated  
Rooms  
For Every Purpose

- Normal Temperature Rooms
- Zero, Low Temperature Rooms
- Tailor-made Rooms for any required temperature, of any desired size.

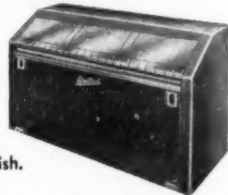
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World famous for performance and design. 14 models to meet all requirements in stainless steel or brown Dulux finish.



### UPRIGHT FREEZER

15 Cubic Feet

Scientific placement of cooling coils, two separate food compartments, dual doors to minimize cold loss, insure balanced freezing at minimum cost.



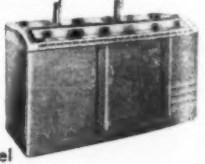
### KUBEMASTER ICE CUBE MAKER

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## Spring Electric Carnival

### Nashville Event Lures Prospects to Dealers' Stores

NASHVILLE, Tenn.—Assured that major electrical appliances will be in fair to good supply at the time, the Nashville Electrical Dealers Association has decided to stage a "Spring Electric Carnival" from May 7 to 19.

The carnival, a city-wide promotion of the same type that has been held annually here for some time, will be put on in cooperation with the Nashville Electric Service.

Three-fold purpose of the promotion is:

1. To encourage interest in sale of major electrical appliances and television receivers.

2. To encourage floor traffic and promote sales in participating retail dealer stores.

3. To point out to the public the advantages of better living electrically.

The association intends to advertise through the various media during the period of the carnival that the carnival is being conducted in retail appliance stores.

Participating dealers' names and addresses will be listed in all newspaper advertising inviting the public to come into their stores to see the many new models of electrical appliances and television receivers on display.

#### VISITORS GET TICKETS

Each customer visiting a participating store will be given a free ticket to be filled out which will entitle him to a free chance on all grand prizes to be given away at a public drawing at the conclusion of the promotion.

All prize tickets will be in two parts. One section will be retained by the dealer for prospect leads and the other will be placed in a container for the prize drawings.

All prizes will be donated by the electrical appliance distributors and manufacturers. They will be displayed two weeks prior to and during the promotion on the sales floor of the utility.

#### FINANCING ADVERTISING

Manufacturers and distributors are also being asked to underwrite the cost of three 1,000-line center-page advertisements publicizing the carnival. Participating dealers will be expected to fill out the balance of each page with individual advertisements.

Distributors and manufacturers will also be expected to assist in decorating dealer stores and window displays, offer cooperative advertising, and cooperate with the dealer by offering prizes to dealer salesmen.

Dealers are expected to purchase the minimum promotional kit consisting of prize tickets, pennants,

window cards, and a container for prize tickets.

They also should set up store promotions with no prizes to have a total retail value of more than \$300, participate in cooperative advertising, and offer special incentive to their sales people.

The utility will display all grand prizes, advertise in the newspapers, devote all its radio time for three weeks to the promotion, send out bill stuffers, and offer \$300 in prizes for the best combined interior and window displays. It will not distribute any tickets.

William D. Hall, sales promotion manager of the utility, said that a three-day cooking school will open the carnival. The school will be held at the War Memorial auditorium.

### Coolerator Institutes Spring Campaign To Push 1951 Appliance Line

DULUTH, Minn.—An intensive spring promotion campaign is being instituted by Coolerator Co. on its 1951 line of appliances, which now includes five additional "supplementary" household refrigerator models, just recently introduced to the field.

H. C. Beresford, Coolerator advertising and sales promotion manager, outlined the company's plans for this spring.

#### EXTENSIVE ADVERTISING

He said that an extensive schedule of advertising is being placed in eight national consumer magazines, but that the major emphasis would be at the local level.

In the regional sphere, Coolerator distributors will schedule full-page, four-color advertisements in newspapers that have large territorial coverage.

Coolerator has also produced a new series of newspaper advertising mats to run locally under the regular cooperative advertising program, Beresford announced.

New point-of-purchase selling aids include an animated full color refrigerator display with a five-phase lighting unit to illuminate important sales features, plus stand-up cards to label the features, and a die-cut easel poster telling customers that all models are available in right or left-hand doors at no extra cost.

#### NEW SPECIFICATION BOOKS

A complete series of new specification books, consumer give-away folders and full line folders have also been produced.

In addition, Coolerator will make available a special wall hanger full line poster in full color and a refrigerator flip-chart demonstration visualizer which contains 16 pages of colorful feature illustrations.

The spring campaign will also include a new series of 5-minute radio shows featuring "Two-Ton Baker, The Music Maker," new television spots, and a brand new refrigerator slide film called "The Magic Word" produced by Wilding Pictures with cartoon animation by Cal Dunn, noted cartoonist.

The current "Bake and Freeze" demonstration program under the direction of Miss Nancy Jaeger, Coolerator director of home economics, will also be accelerated. This program to date has been one of the most successful in company history, according to national training director, R. H. Schneberger.



TRAFFIC STOPPER—Two used refrigerators help to draw traffic to the May Co. appliance store in Denver. They are displayed in the wedge formed by the display window which slants back into the store.

### Wedge In Front Window Solves Problem Of Where To Display Used Refrigerators

DENVER—Appliance dealers who have difficulty in finding appropriate space for the sale of reconditioned refrigerators, may solve the problem for themselves by allocating sufficient space in the next store remodeling, according to Errol D. Reber, operator of the May Co., appliance dealer here.

Reber forecasted accurately that reconditioned trade-ins would loom up importantly in the store's future operations when it was built several years ago, and, therefore, a "set-back" front was installed, leaving a narrow wedge-shaped space "out in the open" in front. This, as shown, is 30 ft. long and 6 ft. wide at the broadest point.

Plenty of space is thus provided to show two or three rebuilt refrigerators at a time, while customers com-

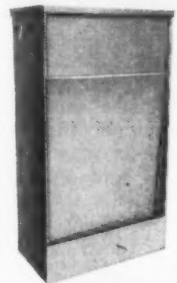
ing inside the store, in search of new appliances, find absolutely no old boxes in the interior to distract their attention.

The May Co. maintains a complete service shop, which disassembles, inspects, cleans up old parts, or replaces badly-damaged ones, to give effective guarantees of 90 days or more on its rebuilt boxes. These are accumulated, rather than sold off as completed, and the store stages periodic sales.

The old models, many of which have been repainted, are exposed to many thousands of shoppers on the street each day, and because they are out in the open, where they may be examined with no fear of an approaching salesman, the rebuilt refrigerator display "stops traffic" constantly.

### BRAND NEW WILL-COOL OIL COOLER

For Machine Tools



Sold through refrigeration trade

Connect it to your own condensing unit.  
MAKE MULTIPLE SALES IN YOUR OWN TERRITORY  
Every Machine Shop and Factory Doing High Production Work a Prospect

Eliminates many production problems for your prospects. Specifically designed to control temperature of production machinery. Sizes to accommodate most machine tools.

Inquiries are invited

B. S. WILLIAMS CO., INC.  
6 North St. Mt. Vernon 1, N. Y.

#### MORE INFORMATION?

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Use Key No. for fastest service.

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it is equipped with a TECUMSEH HERMETIC

Mark Twain said: "Everybody talks about the weather, but nobody does anything about it."

Today people are doing something about the weather—they are air conditioning their offices and homes for better working and living comfort... and if you are one of the manufacturers of these room conditioners, it will more than pay you to investigate Tecumseh's line of hermetics.

Built upon the idea that the refrigeration industry needed a smoother, quieter, more dependable unit, Tecumseh engineers have developed the Tecumseh Single and Twin Cylinder Hermetic Units and Compressors. Free from vibration because they are internally cushioned, these Tecumseh Hermetics bring to the air conditioning industry low-cost, high-capacity condensing units that develop peak performance with minimum size.

If you need a heavy duty compressor that will stand heavy loads under tough conditions, you can rely upon the complete year-in and year-out dependability of Tecumseh.



Send for complete specifications on these 1/3, 1/2 and 3/4 H.P. air conditioning compressors.



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state	state	city	state
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This information helps us to make the NEWS serve you better.			
Send to: AIR CONDITIONING & REFRIGERATION NEWS, 450 W. Fort St., Detroit 26, Mich.			



# Low Temperature Systems

## Factors In the Design, Selection and Servicing of Such Equipment

### 4. Some Approaches to Special Maintenance and Service Problems

This series of articles by Mr. Lopiccio on low-temperature refrigeration covers the following ground:

Single, two, and three-stage refrigeration applied to low-temperature applications, with discussions of the principles involved in each type, and advantages and disadvantages of each type.

Service problems that are somewhat peculiar to these various types of systems.

Applications in which low-temperature refrigeration has a definite function. This covers many fields related to the defense effort.

This instalment, fourth in the series, offers some maintenance and service hints for the serviceman in approaching a low-temperature system.

Material appearing in this series of articles has formed the basis for papers which Mr. Lopiccio has presented before a number of American Society of Refrigerating Engineers section meetings.

By Thomas Lopiccio, Vice President, Bowser Technical Refrigeration, Division of Bowser, Inc.

A brief discussion now as to design, maintenance, and service hints for the serviceman in approaching a low temperature system whether it be single, two, or three-stage compound or cascade seems to be in order at this time.

As was pointed out, special expansion valves are necessary for this low-temperature work. Standard valves with standard power assembly charges are not satisfactory and, as a result, it should be remembered that when servicing a low-temperature installation, it is absolutely necessary to replace an expansion valve if found defective with one of exactly the same nameplate rating and specification.

There has been more harm done in maintaining equipment by misapplication of expansion valves than for any other reason. Particular

note should be paid to the location and installation of the remote feeler bulb of this expansion valve.

Also, when removing expansion valves, care should be taken to prevent the entrance of air or moisture since a system operating at  $-100^{\circ}\text{F}$ . has an extreme affinity for moisture. This is due to the vapor pressure of moisture in the air being considerably higher than the pressure within the system.

#### Presence of Oil Indicates . . .

The presence of oil around an expansion valve, when being removed, indicates that an excessive amount is being circulated and immediately should indicate to the serviceman that the oil separator should be investigated as to performance and cleanliness of the float seat in the

separator.

As for the use of oil separators in the system, it has been explained above that it is absolutely imperative to insure against the circulation of oil in excessive amounts, and as a result, the proper performance of the system depends upon the proper operation of the oil separator. Dirt within the system invariably clogs at the most unwanted places, such as expansion valves and in the valve seat of oil separators.

It is advisable to learn, by the sense of touch, the normal operating temperatures of systems when they are properly operating. In other words, get the feel of discharge temperatures, oil return lines, suction temperatures, crankcase temperatures, etc. If you become familiar with what is normal and what is abnormal, it is extremely easy to

analyze faulty operation of equipment by an intelligent analysis of operating temperatures. This, together with gauge readings, will invariably tell 99% of the story.

As far as oil separator operation is concerned, the temperature of the oil return line will invariably give a clue to the proper or improper operation of the separator.

The subject of oil was discussed briefly with regard to the extreme requirement placed upon the petroleum industry to furnish lubricating oil which must withstand the extremely high temperatures of compressors, as well as the extreme low temperatures within evaporators, and it should be pointed out, here, that great strides have been made within recent years in the design and manufacture of synthetic as well as the manufacture of natural oils for this applications.

#### Requirements for Good Oil

The fundamental and basic requirements for a good, low temperature, refrigeration oil are that the oil provide high film strength and good lubricating qualities when heated to crankcase temperatures of approximately  $180^{\circ}\text{F}$ . maximum. It must also provide free flowing characteristics in low temperature evaporators where the refrigerant temperature approaches  $-110^{\circ}\text{F}$ . or even colder.

If the compressor is splash lubricated, then the viscosity of the oil should be considerably lower than if the compressor is force-feed lubricated. Each condensing unit manufacturer specifies the necessary oil to maintain proper lubrication of bearing surfaces.

It is absolutely imperative that the service engineer recognize that all lubricating oils are not interchangeable one with the other and that the same oil must be added to the system as was previously installed therein. Oils are not oils as such. They cannot be blended in the field.

#### If Change Is Necessary Drain System Completely

If it is found necessary to change oil in the system, it should be drained completely from the crankcase of the compressor and from the oil separator, and the entire refrigerant system, from condenser receiver through the liquid line and evaporator to the suction of the compressor, should be thoroughly flushed out with carbon tetrachloride and the complete system evacuated to remove the last traces of carbon tetrachloride before fresh refrigerant and fresh oil can be added to the system.

This point cannot be stressed too strongly and should be remembered. I am sure that no good refrigerating engineer would think of adding a different refrigerant to a system that had been charged with one type of refrigerant without giving due consideration to the necessity of changing lubricating oils, possibly expansion valves, and possibly the horsepower of the motor. By the same token, lubricating oils cannot be interchanged without the consideration outlined above.

The story on low temperature evaporators was touched upon briefly above when it was mentioned that all evaporators should be designed to be free draining, and as far as the maintenance or service engineer is concerned, one of the places to look for lost oil is in trapped evaporators or trapped suction lines.

#### One of the Common Failures . . .

One of the common failures in setting up systems is that a free draining evaporator is installed but the entire evaporator system is placed at a lower level than the compressor or condensing unit setup, and, as a result, the suction line, being trapped, accumulates excessive quantities of oil, robbing the compressor crankcase and eventually causing trouble.

The last service hint, with regard to low temperature systems, involves not the equipment or component of the system, but rather, the technique of handling and servicing the low temperature system.

In particular, the importance of proper dehydration of the system, as a unit as well as the individual component parts, shall be discussed.

For ordinary high temperature refrigeration systems where the evaporator temperature does not exceed or get colder than  $0$  or  $-10^{\circ}\text{F}$ ., ordinary commercial driers take care of a considerable amount of moisture which may be in the system when it is initially installed; however, it is quite apparent that, where refrigerant temperature reach  $-100^{\circ}$  or  $-110^{\circ}$  or even  $-150^{\circ}\text{F}$ ., even the minutest trace of moisture in the system will find its way to the expansion valve orifice and will freeze up causing considerable difficulty in operation.

#### Dewpoint Less Than $-120^{\circ}$ to $-160^{\circ}$ Essential

Ordinary commercial systems dehydrated by standard methods and installed with special dehydrators need not have dewpoints of the refrigerant and systems much lower than  $-50^{\circ}$  or  $-60^{\circ}\text{F}$ ., but for these extremely low temperature jobs, it is imperative that the dewpoint of the entire system be less than  $-120^{\circ}$  to  $-160^{\circ}\text{F}$ .

In order to obtain this degree of dryness, extreme care must be given when handling individual components as well as in attempting of evacuation prior to charging. Overnight evacuation with high capacity vacuum pumps is necessary to produce an effective dehydration and evacuation of the system.

It is also suggested that charging be done through a dehydrator of sufficient size to remove any moisture present in the refrigerant.

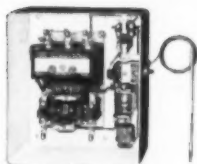
Large size dehydrator installed in the liquid line should be provided and a suitable by-pass arrangement around these dehydrators is recommended for the removal of the dehydrator, after the initial run has been made, consideration being given to the fact that dehydrators are not recommended to be left installed in the line after the system has been thoroughly dried.



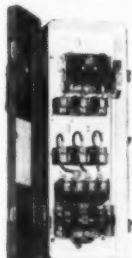
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# Should Walk-In Refrigerators Be Installed On Insulated or Uninsulated Concrete Floor?

The following problem on the installation of walk-in refrigerators was put before AIR CONDITIONING & REFRIGERATION NEWS by an engineering representative of one of the largest food store chains.

The editors in turn placed the problem before an official of one of the major manufacturers of commercial refrigerator equipment, and his answer (compiled with the help of other authorities and members of his field force) is presented following the question.

## Question . . .

Editor:

It is felt that the problem we have would be common to most of the food store operators and perhaps even others. This is with particular reference to the economy and practicability of installing cooler floors, consequently, we would appreciate having your advice regarding same.

Our particular company follows the practice of installing coolers over an insulated concrete floor whereas it is a known fact that others have followed the practice of installing their coolers directly on the uninsulated concrete store floor. (See Fig. 1) In both instances, a basementless building is considered and the cooler floor is required at the same level as the building floor.

Upon investigation of these methods of installation, several conclusions were made as follows:

1. Installing a cooler floor with floor insulation costs approximately \$1.00 to \$1.50 per square foot.

2. The cost of an uninsulated 4-in. concrete floor costs approximately \$4.50 per square foot.

3. The relative insulation value of the following materials is:—Resistivity value "R" per inch of thickness for concrete—.08.

Resistivity value "R" per inch of thickness for corkboard—3.33.

Without insulation the flow of heat would be unimpeded through the relatively high conductance and low resistance of concrete. It would appear then that the earth fill is depended upon for insulation.

Partial information on the "R" values for soil or earth are inconclusive, varying greatly for different soil conditions. A test experiment comparing two equal installations (one with an insulated floor and one without) might be the solution to ascertain which method is the most economical from an initial and operation cost standpoint.

As an example of the comparative operating costs of coolers using the two aforementioned construction methods, please note the following which could be construed as a typical problem.

### 1) EXAMPLE:

Cooler 10 x 16 or 160 sq. ft. floor area.

Assuming 50° ground temp. and estimated cost per B.t.u. @ .000003.

#### (a) INSULATED FLOOR

160 sq. ft. x .095 x 18° td—273.6 B.t.u. heat gain per hr.

This is to be removed per hour or \$0.008 cost of refrigeration to absorb same or \$4.65 per year.

#### (b) NON-INSULATED FLOOR

160 sq. ft. x 3.1 x 18° td—8820 B.t.u. heat gain per hr. This is to be removed per hour or \$.026 cost per hr. of refrigeration to absorb same or \$151.32 per yr. It is assumed also that compressor size will be affected.

While the above calculations are only theoretical, and tend to indicate that insulating the floor is not only practical but also economical, we would, however, appreciate having your comments and suggestions before we proceed further in making a definite decision as to the method we will follow.

## Answer . . .

Analysis and answer by one authority.

"The questioner shows the conductance for four inches of concrete as 3.1 B.t.u. per square foot per degree TD, which compares closely to the values given on page 240 of the ASRE Data Book for concrete of sand and gravel aggregate of 11.35 to 16.36. Therefore, his conductance value of 3.1 would amount to 12.4 conductivity, which is about midway between the two values given in the ASRE Data Book for concrete with sand and gravel aggregate.

"You will note on that same page that conductivity for other types of concrete can be very much lower; for example, concrete with cinder aggregate (which is not often used for floors because it is not very strong) is given as 4.9. For four inches, this would give a conductance of approximately 1.2 B.t.u. per square foot per degree temperature difference.

"The conductance figure of .095 for a three-inch concrete floor plus a three-inch cork insulation with four inches of concrete underneath is roughly in line with the factors given in the Data Book. Therefore, his comparison of heat leakage of the two types of floors is approximately correct.

"He shows a cost of three millionths of a cent per B.t.u. per hour, which would be 2 1/4 cents per kilowatt hour, if we assume about seven B.t.u.'s per watt so that probably is about in order. Of course, as I understand it, the main reason that his competitors are installing coolers directly on concrete floors is to get away from the necessity for pushing a hand truck or walking up a floor ramp from the floor to the cooler.

"Admittedly, that is a nuisance, but his method of dropping the inner floor of the cooler down to the level of the room floor will of course eliminate that objection, although, of course, it involves some added expense and is probably prohibitively expensive in some locations, such as those in which the area underneath the concrete floor is excavated or there is a room below the floor.

"The use of expanded vermiculite aggregate in the concrete for the floor holds definite possibilities. This material begins to get down to a conductivity factor approaching that of cork, although still over double the conductivity for cork, whereas ordinary concrete has a conductivity factor of about twenty times that of cork.

"All in all, I would not think it would be very good practice to eliminate the insulated floor. Admittedly, it saves a lot on the original installation, but the customer more than pays for it in the long run."

The consolidated information received from the Field Service Engineers of a large commercial refrigerator manufacturing firm amounts to this:

When erecting walk-in coolers on concrete floors that were not insulated, some of the large chain construction superintendents stated that their experience was good, except they always used the next larger sized coil, and the floor was covered with about 1 in. to 2 in. of sawdust,

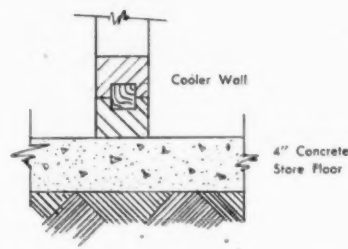


FIG. 1—Cooler installed directly on uninsulated concrete store floor.

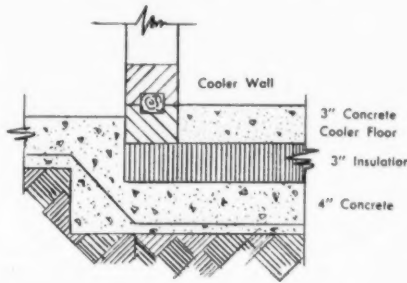


FIG. 2—Cooler installed with 3-in. insulation between cooler floor and concrete store floor.

over which floor racks were placed, and there is no question but what the 1-in. to 2-in. thickness of sawdust has some insulating effect.

The report does indicate, however, that they have had no difficulty with sweating floors. Since it is customary to use sawdust on the concrete floors, any sweating that would appear on

the concrete would be absorbed by the sawdust.

There is one outstanding reason why some owners desire to install a cooler on the floor without a standard cooler bottom, and that is it enables the workmen in the stores to roll a hand truck in and out of the cooler without an incline up to the cooler floor, without any door seal being abused by the truck wheels, and it enables them to put a large floor drain in the concrete floor.

## O. K. McCullough Will Represent Schnacke In Kansas City Territory

EVANSVILLE, Ind.—Appointment of O. K. McCullough to represent the Schnacke refrigeration and air conditioning compressor line in the Kansas City territory was announced by F. C. Schnacke, president of Schnacke, Inc. here.



O. K. McCullough

McCullough has had broad experience in the heating and air conditioning field, having been employed in Chicago and Kansas City as a sales engineer for a number of years. He opened his own business in 1939 in Kansas City.

McCullough is an engineering graduate of Drake university and an active member of the American Society of Refrigerating Engineers and the American Society of Heating & Ventilating Engineers.

## The Name: AIRO SUPPLY COMPANY

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Chicago 14, Ill.

## The Products:

REFRIGERATION and  
AIR CONDITIONING  
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FREE—SEND FOR IT!



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This General Case offers all the advantages of expensive cases, and guarantees performance at this unbeatable price . . .

MM4: 4 Ft. FUL-VISION CASE  
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Despite huge Increases in Material and Labor Costs . . . **\$249**  
**YOU CAN STILL BUY THIS CASE for**

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## Servicing Hermetics In the Field

Another in the series of articles designed to show servicemen how they can service hermetically sealed systems in the field, the installment below continues the discussion of relays and overloads. Anyone planning to service hermetics or already actively engaged in such work must understand the purpose and operation of relays and overloads. This series provides practical information on this important phase of the work.

### How To Check Relays & Overloads on Hermetics - 2

By Arne Perttola, Owner and Manager  
Brighton Hermetic Service, Detroit

#### CHANGING RELAYS FROM ONE TYPE TO ANOTHER (Cont.)

3. Mounting of relays is very important.

The Delco hot wire relay is the easiest to mount, for on most of this make there is no arrow to indicate its operating position. Therefore it can be mounted almost any place in any position.

Magnetic relays must be mounted in the position indicated by the arrow on the relay and in no other position. (See Fig. 6.) If not mounted in the position indicated, the magnetic relay will either fail to make or to break the starting contact.

4. Operation of relay should be checked after installation.

After a magnetic relay has been

installed it should be checked to see that the unit cuts out of the starting winding. If it fails to do so, check the wiring to make sure it is properly wired. Also be sure the relay is properly mounted. If the relay still fails to break the starting winding, the relay is undersized. If the relay is too large, the unit will not be able to start.

After a hot wire relay has been installed and the unit allowed to come to normal operating temperature, check to see if the starting contacts break within 5 seconds. If they do not break within that time, the relay is oversized. If the relay cuts back into the starting winding even for a moment, this indicates that the relay is too large.

Should the unit stop a short time after it starts under normal tem-

perature and no overload and with the hookup correct, this indicates the relay is too small.

#### WESTINGHOUSE DOMESTIC RELAY

The Westinghouse relay used on the domestic refrigerator and drink boxes is a combined magnetic relay and control. All parts of the relay can be seen, and therefore checked quickly and easily. By removing the covers, the operation of the starting and control contacts can be seen as shown in Fig. 7. The overload protective device is mounted on the compressor near the terminals.

If the unit fails to start but the contacts in the relay box are good, the trouble is most likely to be in the overload. This can be determined by jumping the overload with a screwdriver (Fig. 8) or short piece of wire held across the terminals of the overload. If the unit starts then, the overload is defective.

Before replacing the overload the serviceman should find the cause of the overload, for rare is the case where the protective device will become defective by itself.

When replacing this overload, be sure to install the exact type and size replacement. This overload is affected by both the heat of the motor-compressor unit and the amperage draw of the unit.

Servicemen frequently replace the condenser fan motor on a Westinghouse unit when actually the relay is defective but not the fan motor. On a fan-cooled Westinghouse the starting contacts of the relay have to break before the fan motor starts. Consequently, if these contacts become pitted so they won't break, the unit will be cut out by the overload.

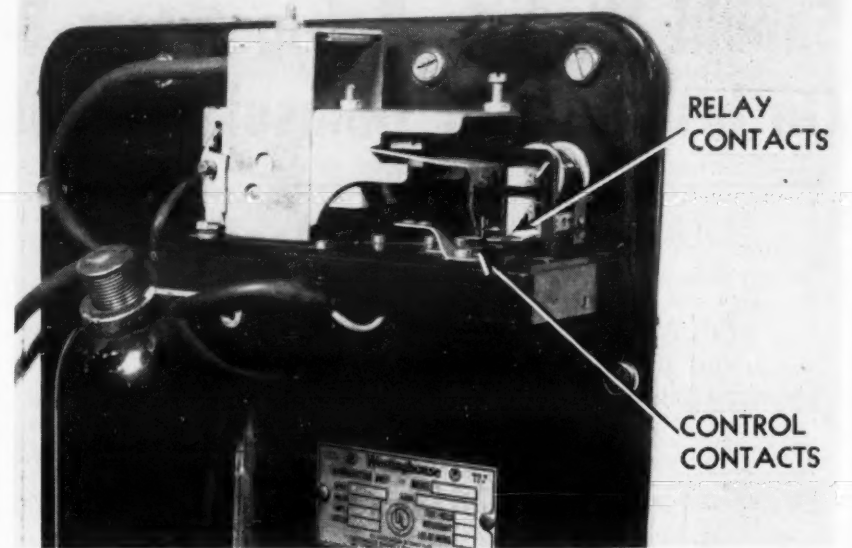


Fig. 7—Westinghouse combines relay and control in same mounting on rear of refrigerator. By removing cover serviceman can readily see both for checking operation of unit.

The fact that the fan won't start doesn't mean in this case, then, that it is defective and is causing the trouble. Observing the operation of the relay will indicate the cause of the trouble.

(To Be Continued)



Fig. 6—Magnetic relays must be mounted in correct position. Arrow is stamped on G-E relay to show top.

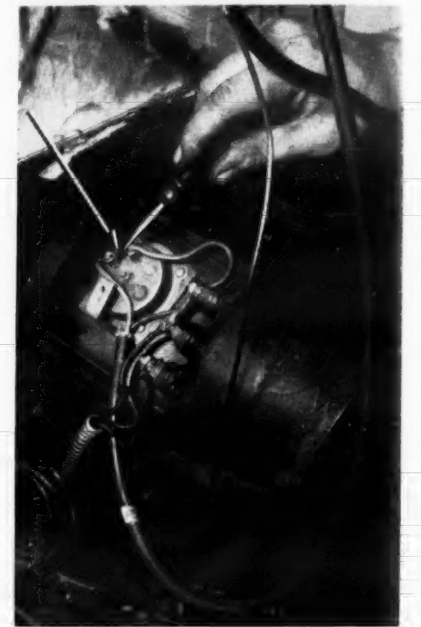


Fig. 8—Westinghouse overload is mounted on unit. Jumping terminals with screwdriver will show if overload is defective. DON'T short out overload permanently. If defective, replace it.

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9502N95 C-H "specific-fit" for Tagliabue models.



9521N29 C-H "specific-fit" for Frigidaire 1936-37-38 models.



9502N453 C-H "specific-fit" for Stewart-Warner 1937 models.

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# ACRMA-REMA STATISTICAL PROGRAM SUMMARY OF SHIPMENTS OF COMPRESSORS FOR FOURTH QUARTER, 1950

(Number Manufactured and Sold for Refrigerants Other Than Ammonia)

Horsepower	SEALED TYPE (Hermetic or Closed) FORM A				OPEN TYPE, AIR COOLED FORM B				OPEN TYPE, WATER COOLED FORM C			
	Continental U. S.	Non-Continental U. S.	Total	Export	Continental U. S.	Non-Continental U. S.	Total	Export	Continental U. S.	Non-Continental U. S.	Total	Export
	Mfrs. (N)	Mfrs. (O)	(P)	(Q)	Mfrs. (N)	Mfrs. (O)	(P)	(Q)	Mfrs. (N)	Mfrs. (O)	(P)	(Q)
Sold In Unitary (End-Use) Products												
1/2 and less ..	XX	XX	45,150	1,853	47,003	XX	XX	373	XX	XX		
1/4 .....	XX	XX	10,516			XX	XX		XX	XX		
1/8 .....	XX	XX				XX	XX		XX	XX		
1/16 .....	XX	XX				XX	XX		XX	XX		
1/32 .....	XX	XX				XX	XX		XX	XX		
1/64 .....	XX	XX	4,892	1,029	16,437	XX	XX		XX	XX	514	
1/128 .....	XX	XX				XX	XX		XX	XX		
1/256 .....	XX	XX				XX	XX		XX	XX		
1/512 .....	XX	XX	2,669	104	2,773	XX	XX		XX	XX	1,234	
Sub-Total ..	XX	XX	63,227	2,986	66,213	XX	XX	373	XX	XX	1,748	
Sold as Compressor Bodies, Compressors, or Condensing Units												
1/2 and less ..	98,399	2,751	227,666	29,295	260,877	5,638	1,462	9,165	1,336	13,537		
1/4 .....	126,516			3,916			2,065	4,680	2,933	9,664	420	1,544
1/8 .....	51,221	2,647	53,868	916	54,784	2,251	4,680	6,931	2,933	9,664	116	267
1/16 .....						1,594	5,532	7,126	2,609	9,735	1,008	1,252
1/32 .....						906	3,388	4,294	713	5,007	183	1,061
1/64 .....						2,345	2,293	4,638	673	5,311	280	1,112
1/128 .....	17,993	3,241	21,234	438	21,672	139	1,314	1,453	169	1,622	789	1,061
1/256 .....						1,259	1,343	2,602	432	3,034	166	1,016
1/512 .....						632	750	1,382	407	1,789	99	814
Sub-Total ..	294,129	8,639	302,768	34,565	337,333	14,764	22,827	37,591	12,308	49,899	1,241	7,005
Grand Total ..	XX	XX	365,995	37,551	403,546	XX	XX	37,964	12,308	50,272	XX	9,994

\*Figures omitted to avoid disclosure of operations of individual companies. Notes: Totals shown above do not include compressor bodies shipped for or incorporated in Household Refrigerators. In order to avoid disclosing the operations of individual companies, some data for two or more sizes of units are combined.

Reporting companies: Airtemp Div., Chrysler Corp.; Baker Refrigeration Corp.; Brunner Mfg. Co.; Carrier Corp.; Curtis Refrigerating Machine Div. of Curtis Mfg. Co.; Frigidaire Div., General Motors Corp.; General Electric Co.; General Machine & Mfg. Co.; Kelvinator Div., Nash-Kelvinator Corp.; Lehigh Mfg. Co., Div. of Lehigh Foundries, Inc.; Lynch Corp.; Mills Industries, Inc.; Norge Div., Borg-Warner Corp.; Servel, Inc.; Tecumseh Products Co.; Universal Cooler Div., Tecumseh Products Co.; Westinghouse Electric Corp. (Springfield and Hyde Park [Boston], Mass.); Worthington Pump & Machinery Corp.; York Corp.

## ACRMA-REMA STATISTICAL PROGRAM SUMMARY OF SHIPMENTS OF COMPRESSORS FOR JANUARY, 1951

(Number Manufactured and Sold for Refrigerants Other Than Ammonia)

Compressor Bodies, 5 Hp. and Under	SEALED TYPE (Hermetic or Closed) (From Form A, Col. P.)		OPEN TYPE, AIR COOLED (From Form B, Col. P.)		OPEN TYPE, WATER COOLED (From Form C, Col. P.)	
	Total	U. S. Shipments	Total	U. S. Shipments	Total	U. S. Shipments
Sold in unitary (end-use) products .....	62,758		*		1,454	
Sold as compressor bodies, compressors, or condensing units .....	122,252		13,876		3,283	
Total .....	185,010		*		4,737	

\*Omitted to avoid the disclosure of figures of individual companies. Notes: The above figures are computed on the following bases: a. The number of compressor bodies reported includes only those that were both manufactured and sold by the company reporting. b. Compressor bodies that are intended for use with Household Refrigerators are not included. c. Only those compressor bodies are included above that are 5 Hp. and under, intended for use with refrigerants other than ammonia, and intended for use within the Continental United States. d. Data reported monthly on this form should agree with data reported quarterly and semi-annually on other forms.

### If at First You Don't Succeed—

## NPA Directive Can Get Critical Materials For You If Your 'DO' Order Fails

WASHINGTON, D. C.—If a DO order won't get you critical materials in time, a directive from Manly Fleischmann, director of the National Production Authority, will.

The NPA has not publicized the fact that it has the power to, and does, issue such directives. But in emergency situations where a directive will help to increase or maintain defense production, the agency has ordered suppliers of the critical material to deliver a specific amount to a particular customer by a specific date.

These directives take precedence over DO orders and may even mean taking actual supplies that were intended for another firm on a DO order, it was reported.

Charles E. Wilson, mobilization director, stated recently that NPA had issued more than 650 directives up to the end of March. NPA officials have indicated that they intend to use directives as needed until the Controlled Materials Plan gets rolling smoothly.

The producer who thinks he should have a directive to get some critical material should apply to his local district NPA office and also to his NPA industry division.

### Super-Cold--

(Concluded from Page 1, Column 2) named acting executive vice president and general manager, and Mrs. Beatrice Rezak becomes secretary-treasurer to succeed the late S. J. Stein, who died recently.

Waingrow will head all manufacturing sales and accounting activities of Super-Cold, while Mrs. Rezak will be in charge of the general accounting office, it was announced by Kessler.

Glendon W. Stephens, who has been assistant general sales manager, will continue in the general sales office here to handle matters pertaining to sales.

Besides Kessler, who continues as chairman, the new board directors include Albert Kessler, Alex Deutsch, Sidney Schwartz, Maurice Schwartz, and Joseph Lipack.

### Fire Damages Appliance Dealer

GRAFTON, Neb.—Baumann Brothers, Inc., appliance dealer, suffered fire damage estimated at \$150,000 including loss of the building and destruction of 14 electric refrigerators, 10 kitchen ranges, three trucks, four cars, and numerous other appliances.

The Baumann family has been in business here for nearly 30 years, and the appliance business was expanded in 1947.

### Proposed Sales Tax Killed

LINCOLN, Neb.—The Nebraska legislature has killed a bill which would have levied a 2% sales tax on all sales amounting to more than 20 cents.

Appliance dealers of the state have consistently opposed the measure which has been introduced unsuccessfully in the state legislature for the past four sessions.

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## 3-Man Board Set Up To Hear Mfrs. Appeals For Broader Allocation of Materials

WASHINGTON, D. C.—Manufacturers who have failed to get adjustments in their allocations of critical materials after pleading their case before the proper industry division of the National Production Authority, may now appeal their case to a newly-created three-man board.

Manly Fleischmann, NPA director, recently announced the establishment of the appeals board and the appointment of Dr. T. Munford Boyd, professor of law at the University of Virginia as its chairman.

Fleischmann said that appeals may be taken to the board when a company has no new facts to substantiate requests for adjustment which have been rejected by the appropriate industry division.

When new facts are introduced, then the case must be reopened by the division. Such re-applications must be made within 30 days of the original decision.

Appeals to the board can be made when the manufacturer believes the NPA division's decision works an exceptional and unreasonable hardship on him which is not suffered generally by others in the same trade or industry, or in the same relative position; results in improper discrimination against him; or is not in the public interest or the interest of national defense.

"In considering requests for adjustment which claim that the public interest is prejudiced by the application of any provision of an order," Fleischmann asserted, "consideration

is given to the requirements of the public health and safety, civilian defense, and dislocation of labor and resulting unemployment that would impair the defense program."

Appeals to the board must be filed in quadruplicate with the secretary of the board in Washington. Notice of appeal must include the nature of the NPA action appealed from, the grounds for appeal, and copies of documents on the NPA action.

The appeal notice must state whether a hearing before the board is desired. It must be filed within 45 days after the NPA decision on the application for adjustment.

In the case of decisions on applications for adjustment made before the establishment of the board on April 25, appeals must be filed before June 9, 1951.

Hearings will be informal and open to the public, except where national security or confidential information is involved. An appellant may be represented by counsel.

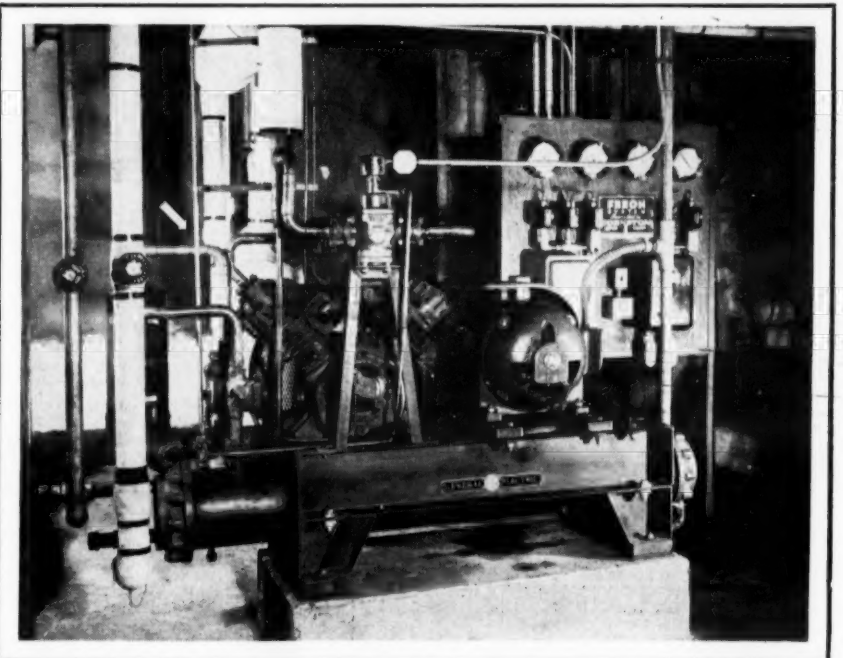
Board decisions will be by majority vote and will be final. Written decisions are not required, though all parties shall be notified of the decision in writing within five days.

Besides Dr. Boyd, other members of the appeals board are Frank J. Peterson and Jack M. Rorimer, both former WPB officials.

### JUST ASK US!

Turn to "What's New" page for useful information.

## Oasis in the Depot



THIS new General Electric condensing unit, part of a water cooling system in Detroit's 17-story Michigan Central railroad depot, helps wet the lips of some 3,700 office workers and 20,000 travelers every day. It replaces an antiquated unit having a 2-ton flywheel, delivers 3,000 g.p.h. of 42° water at lower cost than its predecessor.

The G-E installation is typical of many reported by AIR CONDITIONING & REFRIGERATION NEWS, "The Newspaper of the Industry." It is also an example of how ACRN gives influential coverage of the air conditioning and refrigeration market—from manufacturer to serviceman.

For instance, the contractor on the job, Johnston Refrigeration Construction Co., is an ACRN subscriber. H. B. Leland, who sold it, reads ACRN. The job was engineered by J. M. Baragar, ACRN reader. The installers, Don Hoover and Emil Boltz, both read ACRN. General Electric Company lists 84 ACRN subscriptions among key personnel at its various plants, in key regional offices, and in the G.E. export organization. What's more, General Electric is a consistent ACRN advertiser.

If you are selling anything to the growing industry—motors, condensers, tubing, small parts, air conditioners, coolers, appliances or any of the 1001 things going to the market—ACRN is definitely the marketplace for your product with paid readership in all segments. Let us give you all the facts in our new Market and Media file. It's yours for the asking.

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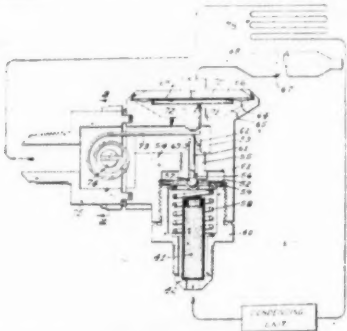
**AIR CONDITIONING & REFRIGERATION News**  
THE NEWSPAPER OF THE INDUSTRY



## PATENTS

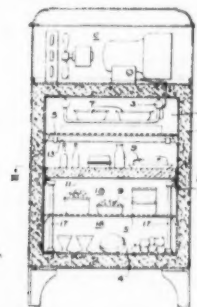
Week of December 12  
(Continued)

2,533,600. **REFRIGERANT CONTROL SYSTEM.** Harold J. Matteson, Glendale, Calif., assignor to General Control Co., Glendale, Calif., a corporation of California.



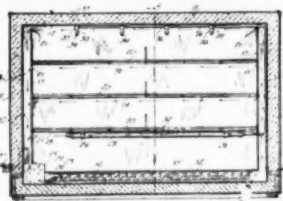
1. In a refrigerant control system: the combination with an evaporator of a thermostatically controlled expansion valve for controlling passage of refrigerant to said evaporator; said valve comprising: a casing having an inlet chamber, and an outlet chamber for connection to the inlet of said evaporator; a partition separating said chambers and having a valve port therethrough; a closure member operable with said port for controlling passage of refrigerant through the valve; a fluid pressure motor for operating said closure member in accordance with the temperature at the outlet of said evaporator; and a bimetallic member in said outlet chamber, and responsive to the temperature of the refrigerant therein, for modifying the action of said motor.

2,533,732. **FOOD TREATING AND STORING REFRIGERATOR AND METHOD.** Robert F. James, Mahwah, N. J., assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.



1. In refrigeration apparatus, the combination of a cabinet, a porous partition for dividing the cabinet into two heat-insulated compartments, a heat-absorbing element disposed in one compartment to refrigerate the air therein and to cause a restricted circulation of refrigerated air through the porous partition to maintain the second compartment at a warmer refrigerated temperature, whereby dehydration of foodstuffs in the warmer compartment is inhibited, and ultra-violet radiating means disposed in the warmer compartment for preventing the growth of bacteria and molds, whereby foodstuffs are safely preserved in the warmer compartment.

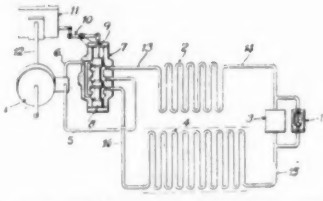
2,533,913. **REFRIGERATED VEGETABLE DISPLAY CASE AND SPRAY SYSTEM.** John S. Booth, Dallas, Tex.



In a vegetable cooling and moisturizing case, the combination comprising a case having a display front, a display compartment and a series of vertically spaced vegetable display racks in said display compartment, a false bottom in said case defining a refrigerating compartment, an absorption coil in said refrigerating compartment, a wall at each end of said display compartment spaced inwardly from the ends of said case and defining a vertical air duct at each end of said case in communication with said re-

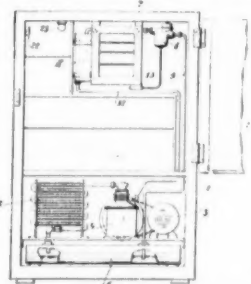
frigerating compartment, said end walls each having a series of vertically spaced horizontal slots effecting communication between said air ducts and said display compartment, thermostatically controlled means for causing circulation of air through said refrigerating chamber, air ducts and longitudinally of said display racks through said horizontal slots, a water precooling chamber below the lowermost of said display racks, a series of spray heads above the uppermost of said display racks, means for supplying water to said precooling chamber to be conveyed to and discharged by said spray heads in mist form into the air circulated in said case and distributed thereby throughout said display compartment and time controlled means for predetermining the operative periods of said spray heads.

2,534,031. **DEFROSTING SYSTEM FOR REFRIGERATORS.** Paul Kollsman, New York, N. Y.



5. In a refrigerating system, a compressor in which the refrigerant fluid is compressed, a condenser in which the compressed refrigerant fluid is cooled, an evaporator in which the refrigerant expands to reduce the temperature, an expansion valve between the condenser and the evaporator normally controlling the passage of fluid therebetween, a check valve by-passing said expansion valve, said check valve preventing passage of fluid therefrom from the condenser to the evaporator but permitting free passage of fluid from the evaporator to the condenser, said compressor being normally connected to cause fluid flow through the condenser to the evaporator, and means for periodically and automatically reversing the direction of fluid refrigerant flow through the system so as to pass warm refrigerant fluid through the evaporator to effect removal of frost condensed thereon, the fluid in its reversed flow passing freely through said check valve.

2,534,032. **REFRIGERATOR DEFROSTING SYSTEM.** Paul Kollsman, New York.



1. In a refrigerator, a compressor for the refrigerant fluid, a condenser for the fluid, an evaporator in which the fluid expands to perform a cooling operation, an expansion valve controlling the passage of refrigerant fluid between the condenser and the evaporator and means for automatically by-passing the expansion valve in response to an operating condition to pass the warm refrigerant fluid directly into the evaporator in the same direction as in the cooling operation to quickly raise the evaporator temperature and effect a defrosting operation.

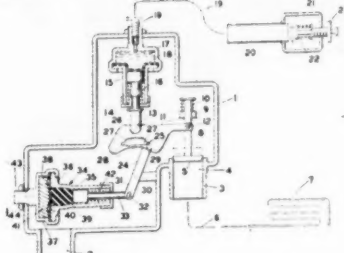
AVAILABLE FOR LICENSING  
OR SALE

Pat. 2,508,326. **REFRIGERATOR UNIT.** Patented May 16, 1950. Refrigerator unit may be easily installed or removed as a unit from a refrigerator cabinet without disturbing the cabinet construction, or breaking any refrigerator line connections. One embodiment of the unit is adapted to be removably inserted into the lower end of a coin-controlled bottle-dispensing cabinet. The unit of this embodiment includes a frame consisting of upper and lower platforms and a vertical end member interconnecting the platforms at one end. The evaporator is mounted on the upper platform, and the condenser-compressor unit is mounted on the lower platform. When the unit is inserted into a bottle-

dispensing cabinet, the vertical end member of the frame of the unit will form a continuation of the back wall of the cabinet. Modification shown. (Owner) The Bastian-Blessing Co., 4201 W. Peterson Ave., Chicago 30, Ill. Group 35-84. Reg. No. 38,987.

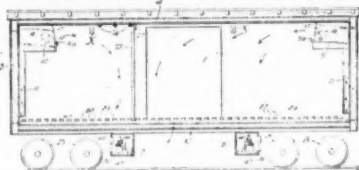
Week of December 19

2,534,251. **AUTOMATIC VALVE.** Earnest J. Dillman, Detroit, Mich., assignor to Detroit Lubricator Co., Detroit, Mich., a corporation of Michigan. Application Oct. 23, 1946, Serial No. 705,042. 9 Claims. (Cl. 236-1.)



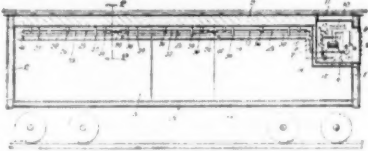
3. A temperature responsive valve for regulating the flow of heating and cooling medium, comprising a valve casing having an inlet and an outlet port, a valve member cooperable with said port, a lever operable to move said valve member, a power element responsive to temperature external of said casing and having a thrust member pivoted to said lever, an arm pivotally supported in said casing and movable into pivotal supporting engagement with said lever on opposite sides of the pivotal engagement of said thrust member and said lever, and means responsive to change of temperature of the fluid in said casing and operable to move said arm from one side to the other of said pivotal engagement thereby to reverse the movement of said valve member by one direction movement of said power element.

2,534,272. **MULTITEMPERATURE REFRIGERATOR CAR.** Herman W. Kleist, Chicago, Ill., assignor to Dole Refrigerating Co., Chicago, Ill., a corporation of Illinois. Application Dec. 22, 1947, Serial No. 793,202. 3 Claims. (Cl. 62-117.)



1. In a multi-temperature container, a heat insulating outer structure adapted for the transportation of chilled or frozen goods, a cooling system including separate units, each unit including a housing having air inlet and outlet apertures in communication with the storage space within the container, said housings being located at separated points, cooling members in each said housing, and means for cycling a volatile refrigerant therethrough, said cooling members being positioned for contact with air flowing through the inlets and outlets of said housings, means for moving air through said housings and across the surfaces of said cooling elements, and a partition in said container positioned to divide the container into a plurality of separate and widely unequal spaces, said units being of generally the same capacity, one of such units being in communication with each such space.

2,534,273. **SELF-CONTAINED REFRIGERATING FREIGHT CAR UNIT.** Herman W. Kleist, Chicago, Ill., assignor to Dole Refrigerating Co., Chicago, Ill.

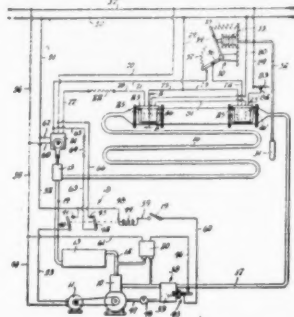


1. In transportable refrigerating means such as storage cars and the like, an insulating structure including walls surrounding and defining a storage zone to be refrigerated, an evaporator structure positioned in said storage zone and including one or more plates each having walls of heat-conductive material surrounding and sealing an enclosed space, each said plate space being partially filled with eutectic, an evaporator coil in each such plate space and in heat exchange relationship with said eutectic, said plates having faces exposed to the interior of said storage zone throughout an area sufficiently great to permit a prolonged refrigerating effect during and due to the thawing of the eutectic therein, a compressor-condenser unit located exteriorly of said storage zone, a Diesel engine therefor, pipes extending between the compressor-condenser unit and the evaporator coil, the eutectic in such plate or plates being in heat exchange relation with the interior of the storage zone through the plate walls, and means for initiating actuation of the Diesel engine after a predetermined time lapse during which the motor has not been in actuation, said time lapse being in predetermined relation to the melting period of the eutectic within the plate or plates, said plate or plates extending generally from end to end and generally throughout the top of the storage zone.

2,534,455. **REFRIGERATING CONTROL APPARATUS.** Lamont B. Koonts, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application June 8, 1944, Serial No. 539,235. 19 Claims. (Cl. 62-4.)

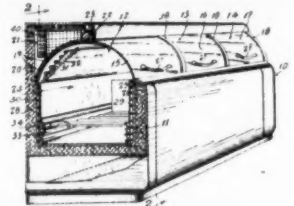
1. In a refrigerating system, in combination, a condensing unit having a liquid refrigerant supply means and a gaseous refrigerant receiving means, an expansion valve, an evaporator, said valve being connected to said supply means for controlling refrigerant flow to said evaporator, reversible motor means for actuating said valve between open and closed positions, and a normally balanced electrical network circuit means for controlling the operation of said motor means, said

circuit means comprising a plurality of spaced electrical temperature responsive impedance means, one of same being located within and near the exit of the



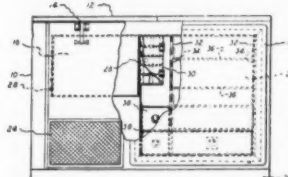
evaporator and another of said impedance means being located within the evaporator and upstream of said one electrical impedance means.

2,534,488. **REFRIGERATED STRUCTURE WITH CURVED DOOR.** Karl A. Weber, Brentwood Heights, Calif., assignor to Weber Showcase & Fixture Co., Inc., Los Angeles, Calif., a corporation of Delaware. Application June 21, 1946, Serial No. 678,499. 4 Claims. (Cl. 62-89.6.)



tracted open position, said guide way being curved to form substantially a quarter of an arc of a circle which is contiguous to and forms a continuation of the arc formed by said door when it is in closed position, refrigerant pipe housed within said structure immediately below said guideway, said guideway extending and being disposed between said back wall and said refrigerant pipes, a guard plate mounted adjacent said refrigerant pipes and being mounted in front of the same, said guard plate sloping generally downwardly and rearwardly in the direction of said guideway to guard one from touching said pipes and to obscure vision of the door when in open position for purposes of appearance, the door being so arranged on the structure that its curve faces concavely downwardly in all positions thereof and the guideway being curved concavely downwardly and rearwardly to thereby allow the door to be maintained in either its open or closed position of stable equilibrium solely by gravity forces acting thereon.

2,534,546. **TWO-TEMPERATURE TOP REFRIGERATOR.** Robert N. Dunlap, Jackson, Mich., assignor to The Sparks-Withington Co., Jackson, Mich., a corporation of Ohio. Application Nov. 1, 1946, Serial No. 710,010. 3 Claims. (Cl. 62-89.)



2. A refrigerator cabinet comprising a top opening low temperature compartment, a front opening normal temperature compartment adjacent said first compartment and at one side thereof, a vertical heat exchange dividing wall between said low temperature compartment and said normal temperature compartment, and an ice making compartment within said normal temperature compartment and in heat exchange relationship with said heat exchange dividing wall.

(To Be Continued)

## CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$5.00 per insertion. Limit 50 words. 10¢ per word over 50.

RATES for all other classifications \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count. Please send payment with order.

## POSITIONS WANTED

APPLIANCE SERVICE man desires position with factory, distributor or major appliance store in a warm climate state as field service representative. Have had 13 years of appliance service experience including refrigeration. The last 8 years with a major appliance distributor. Available after June 1st. Reply to BOX 3725, Air Conditioning & Refrigeration News.

## POSITIONS AVAILABLE

REFRIGERATION ENGINEER—Sales and application engineer wanted to handle office correspondence, preparation of estimates, price sheets, layouts and some purchasing, for manufacturer of commercial and industrial refrigeration. Write headquarters office in Philadelphia. Excellent opportunity for young, experienced man, to gain diversified experience with recognized growing concern. Write full details—including salary requirements & references in first letter. Replies held confidential. REFRIGERATION ENGINEERING CORP., P. O. Box 7838, Philadelphia, Pa.

COMMERCIAL REFRIGERATOR salesman. Must be familiar with Hussmann or similar equipment, able to figure own jobs and handle store layout. Excellent opportunity with progressive organization. Salary and commission. Also have opening for competent wholesale man. Give complete details background and experience. ZEROZONE HOUSTON COMPANY, INC., 1120 Wood St., Houston, Texas.

WANTED: MAN with tested commercial cabinet and designing engineering experience. Must be graduate BSME or experienced equivalent with actual metal layout and executive drafting tooling background. Salary mid to top four figures. Furnish complete resume of education, employment experience, personal qualities and general information. Real opportunity for man age range 30-45. Small town—desirable living conditions. Splendid opportunity for advancement to executive group. Please write BOX 3719, Air Conditioning & Refrigeration News.

REPRESENTATIVE TO sell nationally known commercial refrigeration line to dealers and chains in Ohio and Eastern Michigan on commission basis. Several dealers already established in territory. Write BOX 3723, Air Conditioning & Refrigeration News.

WELL ESTABLISHED air conditioning and commercial refrigeration distributor located in Alabama has opening for two experienced service engineers. An average earning of over \$5,000.00 per year plus car allowance or will furnish car. Apply BOX 3724, Air Conditioning & Refrigeration News.

AIR CONDITIONING salesmen. Experienced in selling packaged air conditioners, water towers, pumps, etc. Wholesale only. Liberal salary, bonus and car expense for the right man. New York City only. BOX 3726, Air Conditioning & Refrigeration News.

## EQUIPMENT FOR SALE

INVENTORY CLOSE-outs—2 Gemco 3 & 5 ton air conditioners. 1 Lenco window unit. 2 Blue Flash bottle coolers. Models

R. & T. 1 Perlick bottle cooler. 6 Master lockers. 1947-1/2 ton panel truck, plate coils. Write for prices. BEARDSLEY REFRIGERATION CO., 1274 Velp Ave., Green Bay, Wis.

1-NEW Model 20-HF Freon Emery Thompson 20-quart ice cream freezer, stainless steel panels, shopworn. Please write for additional information and price. PLINT REFRIGERATION CO., Birmingham, Ala.

COMPRESSOR BODIES, brand new; model #19 good up to 1-HP. @ \$38; includes flywheel and service valve. The last of a large quantity. First come, first served. MANN REFRIGERATION SUPPLY CO., 15 Astor Place, NYC, GRamercy 3-8000.

1/4-HP 0-25 prominent brand condensing units complete; brand new; limited quantity; act now; \$52 each FOB New York; write for specifications; other sizes also available; MANN REFRIGERATION SUPPLY CO., 15 Astor Place, New York 3, N. Y.

CAN YOU use 1/4-HP low-temperature model L2M units at \$52? Also other sizes. Write for literature and specifications. NEW YORK REFRIG. CO., 35 E. Fourth Street, New York, N. Y.

FOR SALE—while they last—standard makes—new hermetic units—static & fan-cooled cond. 1/4, 1/2, 3/4, 1, 1 1/2. Open Units—1/2-1 1/2. Relays—1/4-1/2-1/2-1/2-also overload protectors. #673 Methyl T.X.V. Capacitors in jet-black steel case 190-240 mfd. Small hermetic driers. 1/4" fl.-7 1/2" overall Driers. Household Cold Control—w/Knob & plate. Also other parts and supplies. Send for our latest list and prices. Sold on money back guarantee. WALTER W. STARR, 2333 Lincoln Ave., Chicago, Ill.

COMPLETE 30 H.P. Voss Ammonia Plant, \$1,000. YORK WESTCHESTER CORP., Harrison, New York.

## BUSINESS OPPORTUNITIES

FOR SALE—Refrigeration and coin machine business, modern home. 50 coin machines on location in north central Wis. resort city. Population 10,000 in 20 mile area, no competition. This is a combination showing a better than average income. Owner entering hospital. Box 296, Crandon, Wis. Phone 80.

## SCHOOLS

VETERANS ATTENTION: Enroll in the school of your choice before the July 25 deadline. For men engaged in or who would like to become engaged in any phase of air conditioning, refrigeration, heating, ventilating, heat pump engineering or sheet metal work, classes before the July 25 date start April 24, June 5 and July 17. Write for catalog. DETROIT AIR CONDITIONING INSTITUTE, 4258 Woodward Avenue, Detroit 1, Michigan.

## MISCELLANEOUS

NORGE SEALED units remanufactured and exchanged. Immediate delivery from stock, 1 year warranty. Write for prices and shipping instructions. Genuine Norge terminals for Norge sealed units. Complete set of three, \$1.45 plus postage. MODERN REFRIGERATION CO., INC., 12541 E. McNichols Road, Detroit 5, Michigan.

NORGE SEALED units—remanufactured and exchanged. All SO<sub>2</sub> units converted to "Freon-12." Factory methods are used, and all work is supervised by Norge factory trained men. For additional information and prices write NORD HERMETIC COMPANY, 1701 San Leandro Blvd., San Leandro, California.

## Subscribe Now

Receive the greatest trade paper in the Industry—AIR CONDITIONING & REFRIGERATION NEWS. Published every week. Brings you latest news and vital information on household refrigeration, commercial refrigeration, air conditioning, home freezers; manufacturing, distributing, retailing, servicing, and contracting. Only \$5 per year, 52 issues.

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5-7-51



## Government Contracts

### PROCUREMENT INFORMATION

The following is a list of proposed procurements issued by the various indicated U. S. Government procurement offices. This list is compiled and made available daily on a free pick-up basis. Prospective bidders may obtain complete bid sets by a request to the purchasing office under which the purchase is listed in the Synopsis. Be sure to identify completely the bid invitation you wish by including in your request the item description, the invitation number or reference number and the opening date. This will save time in filling your request. For reasons of economy, specifications are normally not included with the bid invitations unless the specification is a new one. First time bidders on a particular item should request a copy of applicable specifications and drawings at the time the request for a bid set is made.

### DEPARTMENT OF DEFENSE

It is not necessary to refer solely to the issuing office for additional data on a bid invitation issued by any of the following U. S. Army Ordnance Offices: Ordnance Tank Automotive Center; Detroit Arsenal; Frankford Arsenal; Picatinny Arsenal; Watertown Arsenal; Rock Island Arsenal; Springfield Armory; Watertown Arsenal; and Watervliet Arsenal. Complete information on any purchase listed by any of those offices alone can be obtained from the Ordnance District Office nearest you. Its address is on file in your nearest Department of Commerce Field Office. Do not ask an Ordnance District Office for information on a purchase unless it is listed by one of the above-named Ordnance District Offices. Ordnance District Offices do not have information on any other purchases.

Description	Quantity	Invitation No.	Opening Date
Commanding Officer, Marietta TC Depot, Marietta, Pa., Attn.: Central Procurement Agency			
Thermometer, Industrial Type	50 ea	314	10 May 51
Thermometer, Refrigerator, Dial 100 ea		314	10 May 51
Officer in Charge of Construction, 13ND, Bldg. 232, Naval Receiving Station, Seattle, Wash.			
Rehabilitation of Heating System, Marine Barracks, Naval Base, Bremerton, Wash.	26583		10 May 51
Commandant of The Marine Corps, Washington, D. C., Attn.: Supply Department, Procurement Section			
Machine, Flake-Ice Plant, Model Der-11, York, or Equal	55 ea	1692	22 May 51
Commanding Officer, Marietta TC Depot, Marietta, Pa., Attn.: Central Procurement Agency			
Tester, Pressure, Gauge	40 ea	315	9 May 51
Thermometer, Industrial, Dial	5 ea	315	9 May 51
Thermometer, Industrial Type	255 ea	315	9 May 51
Thermometer, Shiphold, Engraved Scale	100 ea	315	9 May 51

### GENERAL SERVICES ADMINISTRATION

Description	Quantity	Reference No.	App. Bid Date
Chief, Purchase Division, Federal Supply Service, General Services Administration, U. S. Court House, Seattle 4, Wash.			
Evaporators, Condensing Units, Air Conditioning Units, Condensation Pump, Valves, Fittings, Relays, Etc., 36 Items	Various	2-CR-326-1	5-7-51
Refrigerator, Walk-In, Knock-Down, Prefabricated, Lock-Joint Construction, 12 ft. x 12 ft. x 8 ft. High Crated and Packed for Export Shipment	1 ea	2-R-1833-1	5-9-51
Chief, Purchase Division, Federal Supply Service, General Services Administration, Room 528, U. S. Court House, 219 South Clark St., Chicago 4, Ill.			
Electric Water Coolers	43 ea	CHD-2004	5-14-51
Refrigerators, Commercial Type	6 ea	CHD-1010	5-16-51
Ice Cream Cabinet	4 ea	CHD-1010	5-16-51

General Services Administration, 1114 Commerce St., Dallas, Tex.  
Coolers, Water, Nonelectric 18 ea FW-13668 5-8-51  
Chief, Purchase Division, Federal Supply Service, General Services Administration, Room 528, U. S. Court House, 219 South Clark St., Chicago 4, Ill.  
Refrigerators, Gas Operated 2 ea CHD-1011 5-18-51  
Refrigerators, Electric, 117 ea CHD-1011 5-18-51  
Various Types

Chief, Purchase Division, Federal Supply Service, General Services Administration, U. S. Court House, Seattle 4, Wash.  
Refrigerator, 7 Cu. Ft., Kerosene Operated Type, Porcelain Interior 20 ea 2-S-2309-1 5-14-51  
Range, Electric, to Operate on 118/236 Volt, a.c., Single Phase, 3-Wire Service, 60 Cycle, 39" Wide 7 ea 2-S-2309-1 5-14-51  
Washing Machines, Heavy Duty Household Size, Using 15 Gals. Of Water per Washing 7 ea 2-S-2309-1 5-14-51

### VETERANS ADMINISTRATION

Description	Quantity	Reference No.	App. Bid Date
Chief, Procurement Division, Supply Service, Veterans Administration, Washington 25, D. C.			
ATTN: W. G. EICKE, Phone Executive 4120, Ext. 3916			
Tent, Oxygen, Refrigerated Iceless Type	220 ea	X-77	5-9-51
Regulator, Pressure and Flow Meter Oxygen	36 ea	X-77	5-9-51

### CONTRACTS AWARDED AS OF APRIL 18, 1951

Description — Contractor and Address  
Navy Department, Aviation Supply Office, Oxford Ave. and Martin's Mill Rd., Philadelphia 11, Pa.  
Tubing, cold drawn, pure copper for plumbing and heating.—Reading Tube Corp., 38-12 47th Ave., Long Island City, N. Y.  
Oil cooler assy. for use on HRS-1 and H04S-1 aircraft.—Harrison Radiator Div., General Motors Corp., Lockport, N. Y.  
Tubing, seamless copper, cold drawn.—Lewin-Mathes Co., 1111 Chouteau Ave., St. Louis 2, Mo.  
Fans, electric, bracket type, non-portable.—Westinghouse Electric Corp., 3001 Walnut St., Philadelphia 4, Pa.  
Refrigerators (reach-in), one door type, shipboard type.—F. W. Lang Co., 5235 Whittier Ave., Philadelphia, Pa.  
Refrigerators (reach-in), one door, shipboard type.—Traulsen & Co., Inc., 45-15 35th St., Long Island City 1, N. Y.  
Refrigerator (reach-in), one door, shipboard type.—Jordon Refrigerator Co., Inc., 58th and Grays Ave., Philadelphia 43, Pa.  
Ships Parts Control Center, Naval Supply Depot, Mechanicsburg, Pa.  
Repair parts for pumps and compressors.—Ingersoll-Rand Co., 2037 Chestnut St., Philadelphia 3, Pa.

### CONTRACTS AWARDED AS OF APRIL 25, 1951

Description — Contractor and Address  
Ships Parts Control Center, Naval Supply Depot, Mechanicsburg, Pa.  
Repair parts for pumps and turbines.—Worthington Pump & Machinery Corp., 401 Worthington Ave., Harrison, N. J.  
Temperature Regulators and Various repair parts.—Robertshaw-Fulton Controls Co., Fulton Sylphon Div., Knoxville 4, Tenn.  
Headquarters, Air Material Command, Wright-Patterson Air Force Base, Dayton, Ohio  
Temperature Indicators, cl-05D.—The Lewis Engineering Co., Naugatuck, Conn.  
Aviation Supply Office, 700 Robbins Ave., Philadelphia 11, Pa.  
Fans, electric, bracket type, non-portable.—Westinghouse Electric Corp., 3001 Walnut St., Philadelphia 4, Pa.  
Refrigerators (reach-in), One Door Type, Shipboard Type.—F. W. Lang Co., 5235 Whittier Ave., Philadelphia, Pa.  
Refrigerators (reach-in), One Door, Shipboard Type.—Traulsen & Co., Inc., 45-15 37th St., Long Island City 1, N. Y.  
Refrigerator (reach-in), One Door, Shipboard Type.—Jordon Refrigerator Co., Inc., 58th & Grays Ave., Philadelphia 43, Pa.

### Racine Area Firms Study Certified Television Program

RACINE, Wis.—Television retailers and servicemen in this area have initiated activities for the establishment of a local participation in the Certified Television Installation and Service Program being sponsored by the National Appliance and Radio Dealers Association, reports Julius Kovach of the Paramount Good Housekeeping Shop, Chairman of the Racine NARDA CTIS chapter.

More than 65 retailers and service technicians are to meet at the Wisconsin Gas and Electric Building to

start formulating the committees for their immediate participation.

M. A. Gere, Cook-Gere Co., was selected as chairman of the advertising and publicity committee. The committee includes Ray Christianson of Christianson Bros. Co., Alvin Heck of Keystone Radio, and John Vojtko of the Ace Appliance Co.

An Acceptance and Standards Committee and the Grievance Division Committee were to be selected by the Racine group at their next meeting.

### Detroit RSES Planning Double-Barreled Meeting

DETROIT—For its last meeting of the season the Greater Detroit RSES chapter has lined up a double-barreled meeting featuring a tube-bending contest and a talk and demonstration on soldering techniques. The meeting is scheduled for 7:30 p.m., Thursday, May 10, at the Veterans Memorial Bldg.

Paul Domke of Mueller Brass Co. will discuss soldering, and Mike Mitchell of Imperial Brass Mfg. Co. will stage the tube-bending contest, the tubing being donated by Lee Equipment Co., parts wholesaler.

### Glauber To Head Admiral Distributing Branches

CHICAGO—Clarence S. Tay, president of Admiral Corp.'s distributing branches has announced the appointment of E. R. Glauber as general manager of the company's branch organizations.

Prior to his new appointment, Glauber was eastern regional manager of Admiral branches and before that manager of the New York branch.

Other branches are located in Newark, Chicago, Milwaukee, and Boston. Glauber will maintain his headquarters in New York.

### Rush and Canady Represent GECC In 2 Kentucky Areas

LOUISVILLE, Ky.—Appointments of Frank K. Rush as local representative of the General Electric Credit Corp. in the Lexington, Ky. area and of Joyce L. Canady as representative in the Harlan, Ky. area have been announced by R. R. Campbell, central district manager of GECC.

Rush and Canady will work under the Louisville office.

### New Allen-Bradley Outlet

SAVANNAH, Ga.—Huey F. Baker, co-owner of the Savannah Refrigeration Supply Co., has been appointed distributor of Allen-Bradley controls for the southeast Georgia area.

## SLANTS on Service

### Sand In Water Damages Milk Cooler Impellers

Fine sand or soil particles in the water bath of a milk cooler can cause unnecessary wear of the bearings and shaft of the impeller which circulates the water. Such sand and sediment act as a grinding compound, rapidly wearing away the shaft and bearing.

Thoroughly flushing the tank out every time the water is changed will get rid of the sand that may have been carried into the tank on the bottoms of the milk cans.

In areas where the water supply contains sand or soil, the user should be advised by the serviceman to let the water stand in a cistern or tank before it is pumped into the milk cooler.

This will allow sand to settle out on the bottom and the clear water can be drawn off the top for the cooler.

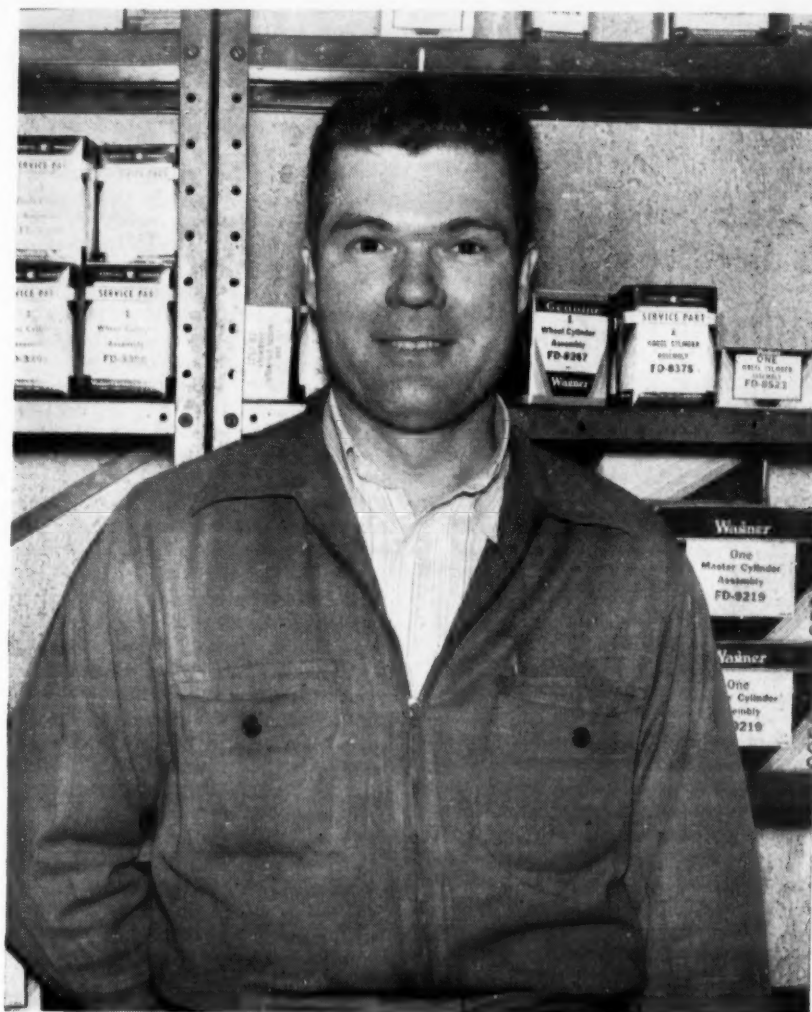
### Tape Prevents Losing Small Screws In Tight Spots

Scotch tape is a big help in holding a tiny screw that goes into a tight spot. Push the screw through the sticky side of the tape, and then fasten the tape to the screwdriver. It won't fall off regardless of the position of the screwdriver.

### Slot In Bolt Will Clean Threaded Hole Easily

Threaded holes can be cleaned out before inserting bolts with a tap, but if the proper size tap is not available one can be improvised for this purpose.

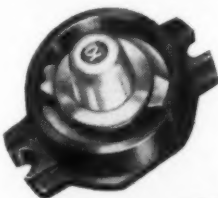
With a hacksaw cut a slot lengthwise in a bolt that will fit the hole. This slotted bolt will remove most dirt, burrs, and rust that jam the hole.



## "KLIXON Protectors Guard Against Major Repairs" States Electrical Contractor

RICHMOND, VA.: James C. Hill, Service Manager, Richmond Battery and Ignition Corporation, is definitely a man whose words on KLIXON Protectors can be profitably listened to by all!

"We repair more than 5000 motors a year for approximately 100 appliance dealers in Richmond and vicinity, and we are the authorized motor service shop here for three nationally-known makes of electric motors. We find that motors which are equipped with KLIXON Protectors seldom require major repair service, whereas the unprotected motors which come into our shop are often burned out."



### KLIXON Protectors Build Customer Goodwill by Preventing Major Repair Costs

The KLIXON Protectors illustrated are built into the motor by the motor manufacturer. In such equipment as refrigerators, oil burners, washing machines, etc., they keep motors working by preventing burnouts. If you would like increased customer-preference, reduced service calls and minimized repairs and replacements, it will pay you well to ask for equipment with KLIXON Protectors.

SPENCER THERMOSTAT  
Division of Metals & Controls Corp.  
2405 FOREST ST., ATTLEBORO, MASS.

## MANUFACTURERS' REPRESENTATIVES!

As an industry service, AIR CONDITIONING & REFRIGERATION NEWS maintains a file of manufacturers' representatives—serving the refrigeration, air conditioning, and allied industries—in all parts of the country and in some foreign countries.

We periodically check our files to expand this service and request all qualified representatives (except those who have written within the last six months) to send us the following information today on their own letterheads:

1. Complete name of company or individual, address, and phone number.
2. Lines and products now carried (not necessary to list manufacturer represented).
3. Lines and products being added or interested in adding.
4. Territory covered by states, parts of states, or countries.

Please send the above information to:

AIR CONDITIONING & REFRIGERATION NEWS  
BOX RPA, 450 W. FORT ST., DETROIT 26, MICHIGAN



## REMA Sets Show Place, Elects Siegfried--

(Concluded from Page 1, Column 5)  
taken at the last show at Atlantic City was 47,800 sq. ft. An option has been taken on the Cleveland Auditorium for the 1953 show. Philadelphia and Atlantic City are under consideration for 1955.

REMA early in the Defense Emergency appointed a Government Requirements Committee under the chairmanship of H. F. Hildreth, Westinghouse Electric Corp., to consult with government defense agencies, working with similar groups from Air Conditioning & Refrigerating Machinery Association and Commercial Refrigerator Manufacturers Association.

### 3-POINT PROGRAM WORKED OUT

A three-point program was worked out in this joint activity, involving the following:

1. The preparation of an industry brochure which would dramatize the essentiality of commercial refrigeration and air conditioning.

2. Suggesting to government a list of persons qualified to serve on an Industry Advisory Committee.

3. Nomination of a thoroughly competent man to act in an administrative capacity for the industry within the structure of the National Production Authority.

Points one and two have been successfully completed, Israel declared. Point three has not yet been fulfilled, but an announcement may be made on it soon.

Seven task committees which report through the General Refrigeration and Air Conditioning Advisory Committee have been appointed. Each committee is instructed by NPA to formulate a conservation order similar to the schedules formerly developed under Limitation Order L-126. Chairmen of these task groups are:

### TASK GROUPS' CHAIRMEN

Heat exchange equipment, E. M. Flannery; drinking water coolers, H. F. Hildreth; soda fountains, L. N. Lucas; display cases, walk-in and reach-in refrigerators, and commercial frozen food cabinets, W. B. McMillan; self-contained room air conditioners, M. G. Munce; refrigeration valves and fittings, W. A. Siegfried.

These conservation orders set limits on the use of critical materials by proposing the utilization of substitute materials satisfactory for the performance of production plans. The water cooler group has completed its assignment. Upon completion of all other schedules, NPA will call a meeting of the general committee to review and approve each report. As an example, the water cooler group was able to work out an estimated annual saving of 800,000 lbs. of copper and nickel bearing steel and still retain its production schedules.

### RECOMMENDS CONTINUING EDUCATIONAL CONFERENCES

A report from F. G. Coggin, Detroit Lubricator Co., REMA chairman of the joint REMA-RSES Educational Conferences and Exhibits, showed a total of 5,739 registrations for the four conferences held during the past 12 months.

Coggin said that his committee feels that conferences should be continued, with continued observance of the non-promotional type of exhibit, but with a reduction of from four to three or possibly two conferences on alternate fiscal years.

The report by H. C. Morrison, Curtis Refrigerating Machine Div., revealed that REMA began its fiscal year on May 1, 1950, with 112 members. In the past 12 months it has added 12 new members, and lost five by resignation, a net gain of seven members to the present total of 119.

On the matter of industry standards, a report by A. B. Newton, Acme Industries, Inc., chairman of the General Standards Committee, said that the committee has reviewed and approved the "Recommended



W. A. SIEGFRIED  
New President of REMA.

Standard for Open-Type Commercial Condensing Units—5 Hp. and Smaller." This standard, in process of formulation for many months by a joint REMA-ACRMA committee, is now ready for printing. The committee also reviewed and approved the Proposed Industry Standard on Forced-Circulation Free-Delivery Commercial Air Coolers.

The Controlled Materials Plans Administrator may look to REMA for certain facts concerning basic materials consumption, said E. B. Bower, Kelvinator, General Statistics Committee chairman, and he urged prompt response by members to any questionnaire that might be sent out. He also said that the joint REMA-ACRMA condensing unit statistics program is continuing satisfactorily. The REMA credit committee under the chairmanship of B. F. Peterson met 11 times during the past year, and with the assistance of Harry Fouts, statistical manager for the REMA headquarters staff, two paying guides were compiled, published, and distributed to members.

With ever-increasing common carrier rates adding tremendously to costs of both production and distribution, a General Traffic Committee was added last year. This committee is prepared to represent the industry before rate and classification bodies of all transportation agencies in matters affecting the industry as a whole. If requested, it will also act in an advisory capacity on specific problems of member companies, stated Chairman Edward H. Kelliher.

### BOOK TO CLASSIFY, DESCRIBE REFRIGERATION ITEMS

In response to a request from Refrigeration Equipment Wholesalers Association, the committee plans the preparation of a handbook which will accurately classify and describe some 500 items of refrigeration equipment.

At the meeting members saw the Food Freezer motion picture, conceived by the Food Freezer Section of REMA, and produced under the direction of the Blakemore Co. of Des Moines and the Extension Department of Iowa State college.

New elected directors are:

J. A. Dugan, Bundy Tubing Co. (three-year term), Tubing and Sweat Fittings Section;

James Emmett, Jr., Jas. P. Marsh Corp. (three-year term), General Products Section;

Henry Steinhurst, Emil Steinhurst & Sons, Inc. (one-year term), Milk Cooler Section;

J. W. Krall, Tyler Fixture Corp. (three-year term), Food Freezer Section;

R. L. Sears, Lynch Corp. (three-year term), Highside Equipment Section;

H. M. Grundage, General Electric Co. (two-year term), director-at-large.

## 'Stop Crying'--

(Concluded from Page 1, Column 4)  
Avco Mfg. Corp., while on the west coast for a distributor meeting.

Sayre warned that "business firms which don't really know how to sell are going to fall by the wayside" in the months ahead.

Saying he believed that "scare buying" is definitely over, Sayre stressed that "business firms are going to have to get out and sell."

Defense production, Sayre said, "may build up so gradually that we will never see any great disruption in the production of civilian goods. But under any conditions, success will come to those firms which are so efficient and wide-awake that they can quickly adapt themselves."

## Changes Sought--

(Concluded from Page 1, Column 4)  
directly from the mill but now has to be purchased from warehouses at higher prices.

The committee pointed out that the industry has historically used suggested wholesale and retail list prices and to discard this method of pricing now would "demoralize" the industry at the retail and wholesale levels.

In this industry, committee members said, manufacturers have always considered tooling as part of production cost. To have to absorb it would put an undue burden on these manufacturers and cause inequities between them.

Small manufacturers, particularly, would suffer if increases in steel costs were not permitted to be considered, the committee said.

## ASRE Spring Meeting Program--

(Concluded from Page 1, Column 4)  
Formal technical sessions will be held on Monday, Tuesday, and Wednesday mornings.

**Comfort Air Conditioning:** Papers on design and control of small air conditioning systems will be presented. D. D. Wile of Refrigeration Engineering, Inc. will speak on design and W. T. Smith of U. S. Air Force will present a paper on humidity control.

**Industrial Refrigeration Applications:** Refrigeration equipment design for use below -20° F. will be described by E. R. Michel of Worthington Pump & Machinery Corp. A paper on refrigeration in greenhouses by A. J. Hess of Hess-Greiner & Pollard will continue the report of his studies for this application originally presented at the 1949 Annual Meeting of ASRE. C. W. DuBois of Minute Maid Corp. will discuss the effect of storage temperatures on the stability of citrus concentrates.

**Design:** Leon Buehler, Jr. of Creamery Package Mfg. Co. will report new data on design and service life of multicylinder ammonia compressors.

**Refrigerants:** A paper on solubility of air in "Freon" will be given by H. M. Parmalee of Kinetic Chemicals, Inc.

**Insulation:** A paper on the physical and chemical characteristics of shredded redwood bark fiber insulation by Edward Simons, consulting engineer of San Francisco and ASRE vice president, will be presented.

In addition to these technical papers, the Domestic Refrigerator

Engineering Conference, a popular feature of recent ASRE meetings, this year will stress application of electric motors to hermetic compressors. H. H. Bixler of General Electric will present the lead-off paper; Milton Kalischer of Westinghouse is chairman of the conference.

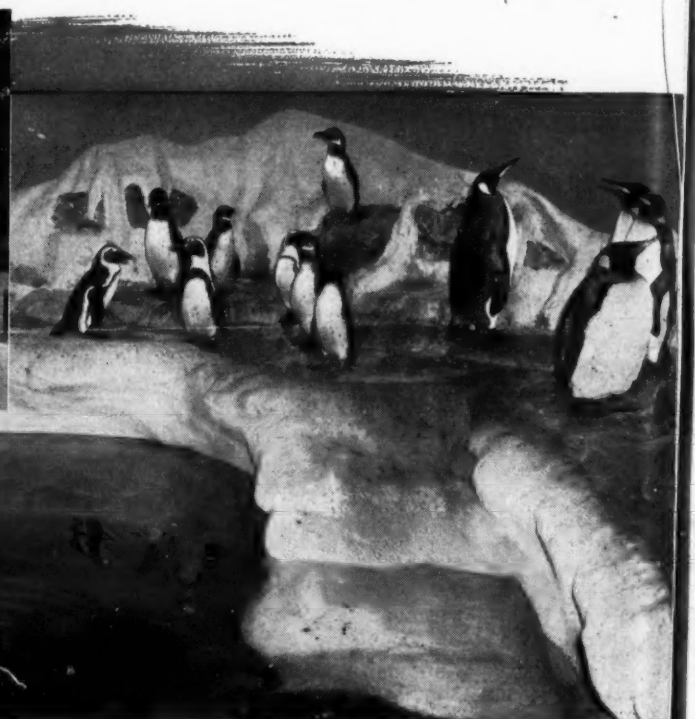
Leon Buehler, Jr. of Creamery Package is chairman of the program committee. Other arrangements for the meeting are in the hands of the ASRE Detroit Section under the direction of Chairman Edward Kellie, president of Aminco Refrigeration Products Co. His convention committee is made up of the following: G. H. Poggen, vice chairman; H. J. Scullen, inspection trips; F. J. Drogosch, transportation; G. R. Kingston, golf; E. Feinberg, entertainment; C. D. Mericle, publicity; F. Y. Carter, reception; G. H. Poggen, finance; G. B. Bright, old timers; and Mrs. T. J. Ammel, ladies committee.

Among the entertainment features being planned by the Detroit Section—host to the event—are the President's Reception Sunday evening, Monday's Welcome Luncheon, and the Monday night surprise party. The Monday night affair will be a Party and Mystery Trip but no details will be released until the party starts. Tuesday night the traditional cocktail party and dinner-dance will be held.

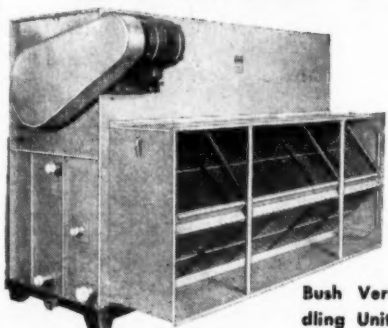
Inspection trips to Nash-Kelvinator, Ford Motor Co., and J. L. Hudson department store; the annual ASRE golf tournament; and committee meetings will fill out three busy days for the refrigerating engineers.



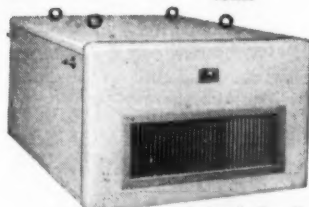
The Bronx Zoo in New York City is one of the largest in the world and contains nearly every known species of bird and animal in existence.



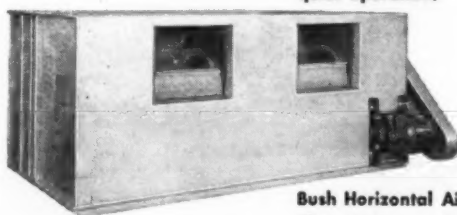
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